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INDEX.

PAGE.

Address, Opening, by Prof. H. H. Hayden, ... 1
American Society of Dental Surgeons, proceedings of 1841-42, 134–256
American Journal and Library of Dental Science, ... 145
America, progress of dental science in, ... 160
Alveolar exostosis, case of, by S. M. Shepherd, ... 193
Anatomy and physiology of the teeth, &c. &c. by D. W. Jobson, M. R. C. S. &c. . 195
An appeal to parliament, &c. on the present state of dental surgery. By G. Waite, Esq. 206
Advice on the care of the teeth. By E. Saunders, ... 207
Anomalous Dentition, . . 208
Animal magnetism, ... 212
Anchylosis of the lower jaw with the temporal bone, . . . 260
Answers to questions of a correspondent, ... 264
Acknowledgment, . . 263
Annual dues, ... 159
Antrum, maxillary, observation on abscess of the, by S. P. Hullihen, ... 179
Antrum, maxillary, muco-purulent secretion of the, by S. P. Hullihen, ... 253
Arsenious acid for destroying nerves of decayed teeth, by W. E. Ide, M. D. . . . 247
Agent, Philadelphia, . . . 263
Alveolar Abscess. By I. I. Greenwood, M. D. &c. . 291

PAGE.

Ashburner, J. M. D. on dentition, 294
Amalgam of mercury and silver, salivation from, &c. &c. 301
American Journal and Library of dental science, vol. 2. 302

B

Brown, Mr. C. letter from, 136–159
Baume, prof. work on dentition, 158
Brewster, Geo. G. on galvanism, 188
Baltimore College of Dental Surgery, ... 207–261
Bibliography, ... 256
Burton, Henry, M. D. &c. on the effects of absorption of lead upon the gums, . 140
Brown, Solyman, M. D., D. D. S. on mechanical dentistry, 161–231–265

C

Conjoined suppuration of the gums, by H. H. Hayden, M. D. 214
Clerical encouragement of quackery, ... 262
Calculus salivary. By C. A. Harris, M. D. 99
Characteristics of the teeth, 65
  of the gums, . . . 84
  of the salivary calculus, 99
  of the fluids of the mouth, 108
  of the lips, . . . 113
  of the tongue, . . 115

D

Dissertation on the Mouth and Teeth, by L. S. Parmly, M. D. 28

PAGE.

Dissertation on professional eminence, by S. Brown, M. D. 120
Dental Surgeons, American Society of, . . . 134–256
Dental Surgeons, officers of the American Society of, . . 134
Dental Science, American Journal and Library of . . 145
Development, Structure and disease of the teeth. By A. Nasmyth, F. L. S. F. G. S. 146–156
Dental Science, progress of in America, . . . 160–299
Dentistry, mechanical, a treatise on, by S. Brown, M. D. 161–231–265
Dental art, statistics of in Paris in 1828, ... 192
Dental art, complete treatise on, 298
Dentist, every man his own, &c. By J. Scott, . . . 201
Dentistry, surgical, operative and mechanical. By Charles De Loud, ... 156
Dental works in progress, 208
Dental bone, on the vascularity of, by C. A. Harris, M. D. 252
Diseases of the gums, . . 263
Diseases of the gums, conjoined suppuration of, by H. H. Hayden, M. D. 214
Dental and Surgical Instruments, 263
Diseases of the maxillary sinuses. By W. W. H. Thackston, D. D. S. 279
Dentition and some coincident disorders. By J. Ashburner, M. D. 293
Dental surgery, institutes of, by J. C. McCabe, ... 297

E.

Editorship, change in the, . 145
Embellishments, ... 160
Exostosis, Alveolar, by S. M. Shepherd, ... 193
Encouragement of quackery, clerical, ... 262
Essays, Popular, on Dental Surgery. 159

F.

Fluid of the Mouth, characteristics of, by C. A. Harris, M. D. 108

PAGE.

Foster, J. H., M. D. letter from, 130

G

Gums, characteristics of, by C. A. Harris, M. D. 84
Gums, their structure, growth, &c. by G. Waite, M. R. C. S. 206
Gums, conjoined suppuration of the, by H. H. Hayden, M. D. 214
Gums, Disease of the, . 263
Gums, Koecker, Dr. on, . 298
Gums, remarkable effects upon the human, produced by the absorption of Lead, . . 140
Greenwood, Dr. Isaac I. letter from, &c. 138
Greenwood, Dr. Isaac I. letter from, &c. 177
Greenwood, Dr. Isaac I. on Alveolar Abscess, ... 291
Goodsir, John R. on the Pulps and Sacs of the human teeth, 156–202
Galvanism, by G. G. Brewster, 188
Gray, John, on Preservation of the Teeth, ... 207
Gardette, Dr. E. B. and the American Society of Dental Surgeons, ... 209

H.

Hayden, Professor H. H. Opening address, &c. . . . 1–157
Hayden, Professor H. H. on the Gums, &c. 213
Harris, Professor C. A. on the Teeth, Gums, &c. . . . 39
Harris, Prof. C. A. on Ozœna, 184
Harris, C. A., M. D., on the Vascularity of Dental Bone, 252
Human Teeth, practical treatise on, by W. Robertson, . 150
Human Teeth, popular treatise on, J. L. Murphy. . . . 155
Human Teeth, Pulps and Sacs of, by J. Goodsir, Jr. 156–202
Health, Guardian of, . . 157
Hullihen, S. P. Observations on Abscess of the Antrum Maxillary, ... 179
Hullihen, S. P. on Muco-purulent secretion of the antrum maxillary, ... 253

PAGE.

Hemorrhage from the extraction of a tooth, ... 304

I.

Inquiry, physiological and pathological, on the teeth, gums, &c. by C. A. Harris, M. D. &c. 39
Ide, W. E., M. D. on the use of arsenious acid for destroying nerves of decayed teeth, . 247
Instruments, dental and surgical, 263

J.

Journal, American and Library, of Dental Science, . . 145
Jobson, D. W., M. R. C. S. &c. &c. on the anatomy and physiology of the teeth, &c. . 195

K.

Koecker, Dr. on the diseases of the gums, . . . 299

L.

Lips, characteristics of, . . 113
Letter, from J. H. Foster, . 130
Letter from Mr. C. Brown, . 136
Letter from Dr. I. I. Greenwood, 138–177
Letter from J. E. Snodgrass, M. D. 141
Lead, effect upon the human gums produced by absorption of, 140
Lintot, Wm. on the structure, economy and pathology of the teeth, ... 207
Lefoulon, Manuel, Pratique de l'art du dentiste. . . . 207

M.

Meeting in Boston, . . 302
Mechanical Dentistry, by Solyman Brown, M. D., D. D. S. 161–231–265
Mechanical Dentistry, surgical and operative, ... 156
Mouth and teeth, management of, by L. S. Parmly, M. D. D. D. S. . . . , . 28
Materials for plugging teeth, . 158

PAGE.

Members, officers, &c. of American Society of Dental Surgeons, 134
Maxillary antrum, observations on, by S. P. Hullihen, . 179
Maxillary antrum, muco-purulent secretion of, by S. P. Hullihen, ... 253
Maxillary antrum, disease of, by W. W. H. Thackston, D. D S. 279
Medical Almanac for 1842, 145
Manuel pratique de l'art du dentiste, par Lefoulon, . . . 207
Magnetism, animal, . . 212
Maxillary bone, removal of the superior, ... 251
Maxilla, lower, anchylosis of the with the temporal bone, . 260
Married, ... 264
Murphy, J. L. treatise on the teeth, ... 155
McCabe, J. D. 297

N.

Nasmyth, Alexander, F. L. S., F. G. S. researches on the teeth, . . . - 146–204

O.

Opening address, by H. H. Hayden, M. D., D. D. S. . 1
Officers and members, . . . 134
Owen, Richard, F. R. S. &c. odontography, ... 156
Origin and development of the pulps and sacs of the teeth, by J. Goodsir, jr. . . 156–202
Omission, ... 157
Ozœna, by C. A. Harris, M. D. 184
Obituary, ... 264

P.

Professional eminence, by Solyman Brown, M. D. . . . 120
Preservation of the teeth, 158–207
Popular essays on dental surgery, 159
Phenomenon, singular, . 160
Progress of dental science in America, . . . 160–299
Porcelain teeth, ... 258
Philadelphia agent, . . 263
Parmly, L. S., M. D. &c. on the mouth and teeth, . . . 28

PAGE.
Plugging teeth, ... 210

Q.

Quackery, clerical encouragement of, ... 262
Questions, answers to, of a correspondent, ... 264

R.

Researches on the development &c. of the teeth, by A. Nasmyth, F. L. S. &c. . 146–204
Remarkable effects of the absorption of lead up the gums, by H. Burton, M. D. . . . 140
Robertson, William, on the teeth, 150

S.

Society of Dental Surgeons, American, . . . 134–209–256
Snodgrass, J. E., M. D. letter from, ... 141
Science, Dental, American Journal and Library of, &c. . 145
Surgical, operative and mechanical dentistry, by C. De Loud, 156
Singular Phenomenon, . 160
Science, Dental, progress of in America, ... 160–299
Shepherd, S. M. dentist, on alveolar exostosis, ... 193
Scott, Joseph, on the teeth, . 201
Saunders, Edward, advice on the care of the teeth, . . . 207
Sinuses maxillary, diseases of, by W. W. H. Thackston, D. D. S. 279
Schange, J. M. A. Precis sur le redressement des dents, 298
Statistics of the dental art in Paris in 1828, ... 192
Salivary calculus, physical characteristics of, . . . 99

PAGE.

T.

Teeth and mouth, management of, by L S. Parmly, M. D. &c. 28
Teeth, characteristics of, . 65
  Development, structure, and diseases of, by A. Nasmyth, F. L. S. &c. 146–204
  Practical treatise on, by W. Robertson, . . 150
  Popular treatise on, by J. L. Murphy, . . . 155
  Origin and development of the pulps and sacs of, 156–202
  Development and structure of, ... 156
  Treatment of the primary, 156
  Plugging of, . . 156
  Preservation of, . 158–207
  Materials for plugging 158
  Economy and pathology of, 207
  Diseases and treatment of, 207–296
  Advice on the care of, . 207
  Decayed, arsenious acid, for destroying nerve in, . 247
  Porcelain, ... 258
Thackston, W. W. H., D. D. S. on diseases of the maxillary sinuses, ... 279
Tongue, physical characteristics of, ... 115

V.

Vascularity of dental bone, . 252

W.

Work, Professor Baume's, . 158
Waite, George, Esq. an appeal by, ... 206
Waite, George, on the gums, 206
Wardroper, W. on the teeth, . 207
Wonderful discovery, . 259
Whitewood, Mr. . . . 208

H. H. HAYDEN M. D.

President of the American Society of Dental Surgeons

For the American Journal & Library of Dental Science

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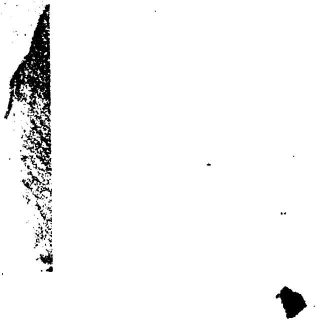

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ARTICLE I.

Opening Address. Delivered by Professor H. H. Hayden, M. D., D. D. S., President of the Society.

Amidst the numerous and diversified subjects that present themselves for our contemplation, as embraced in the moral and physical sciences, no one, it would seem, need hesitate long in selecting one as best suited to the present occasion, or as affording, not only a temporary amusement and edification, but of rational entertainment. Not so, however, with myself in the present instance, for I find that I am placed in a novel situation.

Had I been requested to deliver an address, to some long established literary or scientific society—or on some particular subject, either civil, religious, or political—had I been called upon to address you upon the religion of the Hindoos, or that of the aborigines of our own country—upon the legal codes of Lycurgus, and the wonderful depth of human sagacity and forecast manifested therein—or upon the subject that has called forth the wonder and astonishment of the admiring nations of the whole civilized world—the constitution of the United States, I should feel as if I had something substantial to stand or build upon.

But far different is my situation in the present case—I am deputed to deliver an address to whom? or to what? To a self-created body, which thirteen months ago was not known or acknowledged as belonging to any society or community—without a legitimate head or name, without laws, without government, and, with some exception, without character, except that of the mercenary and unprincipled. But which, from a deep sense of the hitherto unpropitious state and condition of the highly deserving members of the profession, which we have hitherto, and do still wish to cultivate and preserve, have ventured, in accordance with a deep and abiding sense of the propriety of the course, assumed a position or stand, which, if encouraged and sustained, will insure to us not only a respectful but a legitimate claim to the title of zealous cultivators of science, and the undeviating friends of humanity and of social order.

Such is the position, and such the light in which, under existing circumstances, we will consider ourselves in the present instance.

But one short year since, gentlemen, we ventured upon the novel enterprise of convening in a neighbouring city, where the generous and liberal spirit of our professional brethren greeted us with an unlooked for and encouraging welcome, to form, or rather to lay the foundation of a society, or community of dental surgeons.

But few, we presume, that were present on that occasion, will hesitate to acknowledge the fears and apprehensions entertained lest the object of our efforts, however laudable, useful, or commendable they might prove, if successfully carried into operation, might prove abortive, or end in defeat and discomfiture; and be it known and freely acknowledged, that but for the noble, generous and apparently disinterested zeal of the members of that city, and others of the profession, convened on the occasion, we should have been spared the trouble, and deprived of the pleasure of meeting here this day, to receive and reciprocate the hearty welcome, and of uniting our efforts in carrying out, adorning and perfecting the superstructure, which was but imperfectly accomplished at our last meeting.

On that occasion, notwithstanding the unlooked for, nay, the unexpected difficulties which were thrown in our way, and which we *had* to encounter, we succeeded in accomplishing more than we had a right to expect; for be it known, that there were not wanting those who like Samballat, when the Israelites attempted to rebuild the broken and mutilated walls of Jerusalem, said, "What do these feeble Jews? Will they fortify themselves? Will they sacrifice? Will they make an end in a day? Will they revive the stones out of the *heaps* of *rubbish* which are burnt?" And others, like Tobiah, the Ammonite, who said upon the same occasion, "Even that which they build, if a fox go up he shall even break down their stone-wall." Nehemiah, iv, 2, 3. Intimating that even *our* attempt to form a society could not, or would not stand or succeed.

Fortunately, these uncalled for and unseasonable prognostications have not, as yet, been verified or fulfilled. On the contrary, our society was formed—has continued to prosper—to be encouraged by the eulogies and encomiums of the medical philosophers, of not only our own, but even of those of foreign countries and the societies thereof.

On this day we have again convened, not to form a society, but to carry out, and if practicable to perpetuate, the rules and regulations of the constitution and by-laws by which we are to be governed, under the sanction of legislative enactment, and to execute the plans which were contemplated for the promotion of the welfare and prosperity of the society thus formed, and for the elevation of the character of the profession which we have espoused.

Having been thus formed and organized—having been thus convened on the anniversary of the formation of the society, three points present themselves for consideration, and for our deliberation, viz:—1. What terms are best calculated to answer the purpose of an appeal to your feelings, or to your zeal in your efforts to cherish and promote the objects of an institution so novel, so laudable, and so important in its ultimate results?

2. What position or rank shall we assume, with the probability of being recognized as co-workers in the cause of science?

3. What subject or what theme shall I, or can I introduce on this occasion, that is best calculated to elicit and engage your attention—to amuse and entertain—but, more especially, to enlarge the sphere of knowledge or to edify?

In reply to the first point it would seem that no one need be at a loss to determine that a simple, unadorned statement of correlative facts, that have an intimate bearing and connection with the subject in which we are engaged, will be, if not the most agreeable, at least the most profitable and instructive in the end.

2. What rank ought we, or shall we assume?

In reply to this interrogatory, we may observe that although not hitherto recognized as being entitled to a niche in the temple of Esculapius, we assume the title, and claim the rights and privileges of being the studious, diligent and successful cultivators of at least a branch of that important, noble, and only divinely sanctioned science that was ever pursued and cultivated by man—the science of medicine.

The subject, then, which presents itself as being most appropriate or seasonable for the present occasion, is that which has a bearing upon, and an intimate relation with the science of medicine.

So far as relates to our department, its relation to, and connection with the science of medicine, it may not be considered as to its antiquity as coetaneous with the general subject, nevertheless co-existent and inseparable in its connection and its principles, as universally acknowledged. In order then to a *full* and comprehensive view of the subject which necessarily embraces the origin and progress of the science of medicine, it would seem not only proper, but requisite, to give a concise but comprehensive history of the origin and progress of the science from the commencement to the present time.

Such a course would, doubtless, prove highly entertaining and instructive to many that are present; but we claim not the talent for the performance of a duty so arduous and so interesting, and much less so the time necessary for its accomplishment.

We may venture, however, with a view to determine the relative position in which we stand, as a co-ordinate branch, engage in a brief sketch of its history, in order to substantiate our legitimate claim, not only to relationship, but in order to identify ourselves with the parent stock.

Having indulged in our remarks thus far, we will proceed to notice more particularly the object of our pursuits—its origin—its intimate connection with the general science—of its progressive improvements, and of its present state and condition as a branch of the medical science.

. Of the various departments of science, that of medicine, with its auxiliary branches, whether considered in relation to its magnitude and importance, of its intricacies, and the infinitely varied modifications of which it is susceptible, or of its utility in alleviating the distresses, and administering to the comforts of the human family, may be said to stand decidedly pre-eminent to that of any other that has ever engaged the study and pursuits of man.

Not only may it be considered as holding a pre-eminence over that of any other in point of importance and utility, but also in point of antiquity it may be said to stand distinguished and without a rival—for inasmuch as disease and death were entailed upon our first parents and their lineal descendants, we may reasonably infer that the healing art has been held in requisition, and perhaps practised, though for a long time in a rude and uncultivated manner, from the birth of Cain and Abel to the present time.

It is not the object or intention of this essay, however, to establish the period of time at which the healing art was first known, or by whom first cultivated and practised, much less is it our intention to trace up in regular gradation, the important discoveries and successive improvements that have been made since the subject has been methodically and systematically treated, and as such constituting the first in the circle of sciences, and to which almost all others are directly or indirectly tributary—neither is it consistent with our present plan to enumerate or point out the names of all those who have signalized themselves as the votaries of science, and whose lives have been devoted to the rearing and embellishing of this splendid fabric. It will suffice to observe, that from the earliest periods of time to the present, disease has been one of the inseparable concomitants of human existence. That from an increase of population, and a variety of general or local circumstances, over which, either through ignorance or a want of attention, human skill had but little or no control, disease, though under simple forms, became more frequent, and more generally prevalent. Moreover, in every age and nation, we find that in proportion as the inhabitants of the earth were disposed to relinquish their simple customs and manners, as habits of civilization and refinement were inculcated amongst the human family; in proportion as a taste for luxury and ease, gained an ascendancy over reason and judgment, so much as to become the predominant, or ruling passion, so do we find disease in some of its varied forms, as sure attendant in the train, and progressively assuming a more general and extensive sway.

Such a state of things was necessarily calculated to arouse the genius of the guardians of health—to awaken and call forth the energies of their skill in devising means for the mitigation of human suffering, and to control, if possible, the prevalence of diseases that were daily consigning to the silent, the cheerless mansions of the tomb, the fairest and the noblest works of creation.

In the pursuit and cultivation of this important science, scarcely had the practicien of early times become initiated in his profession, and made familiar with the more common and simple forms of disease, when new and anomalous cases were frequently presented to his view, and demanding the exercise of new, and as yet, untried skill.

In an age of ignorance, when neither the attention nor views of the practicien were directed either to the remote or proximate causes of disease—when, it can scarcely be said that any degree of responsibility was attached to the profession, we may reasonably conclude that the treatment was mostly rude, unskilful, and most frequently unsuccessful. But the practicien, being ambitious of a name and character for skill, and stimulated by defeat, feels himself urged on to greater vigilance, and more powerful efforts for the accomplishment of his purpose in subduing the disease and restoring the health of his patient. Hence they were induced to examine, not only the ordinary symptoms of disease, but the various types and modifications of which it is liable under different circumstances, and in various parts of the human system.

This course, so well calculated to instruct and edify, soon opened a widely extended and fruitful field for the exercise of talent and the advancement of the medical science; and in a careful investigation of the subject, it was soon found that not only the human body was liable to disease, both of a general as well as local nature, but that the several parts composing the system, and destined to different specific offices, were liable to diseases *peculiar to themselves*, each requiring a treatment adapted to the particular exigencies of the case. Thus it was found that the skin, the cellular substance, the muscles and the bones, in particular, were liable to diseases of a specific character. The pelvic viscera with its appendages, the abdominal and thoracic viscera, with their appendages, were likewise accompanied with morbid phenomena peculiar to themselves. The head, viz. the greater and lesser brain, with their appendages, the ear and the eye, were no less the seat of disease, often fatal to the part, and even to life itself. Moreover, the mouth, with its appendages, particularly the teeth and the surrounding parts, though last, yet not the least in importance, so far as relates to the *results*, is often the seat of disease, causing great disturbance in the general system, and which likewise, in some cases, terminates in the death of the patient.

Hence, as the knowledge of the science advanced, and a zeal for its improvement and cultivation was manifested, these several parts, with their diseases, became the subject of critical investigation and of discussion. Hence the origin of numerous, vague, and often contradictory opinions, and various treatises intended to elucidate and explain more satisfactorily the strangely diversified, and no less complex characters which were occasionally presented to view.

It is unnecessary to enumerate, and equally as much so to particularize the various discoveries and improvements that were made in the healing art in the earlier periods of its existence, or of its progress through subsequent ages. It is sufficient to state that, although the various diseases incident to the several parts of the human body generally, were, for an immense lapse of time, under the exclusive cognizance of the physicians or medical practicien, it was found that the science of medicine was not only susceptible of subordinate divisions, but that in order to promote a more general and correct knowledge of physiology and pathology, it was highly expedient that the several parts of the human body, with the diseases peculiar thereto, should be more methodically and distinctly investigated, and separately treated of. Hence we have the following branches—viz. general, descriptive, and pathological anatomy—surgery, general and critical—practice of medicine—obstetrics, or midwifery—ophthalmic surgery—aurist—and moreover, that branch which falls under the denomination of dental surgery, the subject to which I beg leave to invite your particular attention during the present discourse.

Hitherto we have indulged in a superficial sketch, a brief outline of the probable origin and gradual progress of the healing art, or as it may perhaps be more properly termed, science of medicine, which, from the commencement, embraced each and every ailment which the human body is, or has been heir to; consequently including those connected with, or resulting from a disordered condition of the teeth; and that too without having included the latter in the view. It is not, however, to be inferred that no notice was taken of the fact, or efforts made to alleviate the sufferings consequent upon a defective condition, or diseased state of those organs. By no means; we have satisfactory proof that the attention of the earliest practiciens was directed to the diseases of the mouth; yet without any method, or system, formed upon a correct physiological, or pathological knowledge of the parts. Hence we are unwilling to admit for a moment, that our profession had even an existence as a branch of the general science, in those early periods of its practice. We are fully aware of the attempts that have been made to trace the origin of our profession to the highest and most remote antiquity, by asserting that vestiges of the art have been found amongst the Hebrews, the Egyptians, the Greeks, and Romans. These remains, or specimens of the art which are mentioned by several of the poets, are doubtless the rude efforts or attempts to supply, by the assistance of a little mechanical skill or ingenuity, the loss of several teeth, even by carving them out of wood or bone with a simple penknife. This we have known to have been done, and that too with no small degree of success by a common unlettered stone-cutter.

These specimens, or possibly highly valued relics, may have been found carefully preserved, and also some rudely formed instruments with which the teeth were made; but it by no means proves that the persons by whom such specimens were executed, could have entertained, at that period of time, the most distant idea that the defects which they were endeavouring to supply, had any relation to, or connection with, the subject as a branch of the medical science; no more than an attempt, by a lady or gentleman, at the present day, to attempt to supply a defect of the kind by the use of white wax. Of this we are fully satisfied by the fact. 1st. That at that period of time the knowledge of anatomy and physiology of the human system was not known, nor could be obtained until even a much later period of time. 2d. Although attempts were made and practised to control certain affections of the mouth, by the earliest practiciens, yet no *correct* physiological or pathological views of this branch of the science could have been had, until the phenomena of the circulation of the blood was made known by the untiring but successful researches of the immortal Hervey.

It would doubtless be not only gratifying, but somewhat edifying, to many who may be present, to listen to a critical historical essay, descriptive of the origin, progress, and present condition of our branch of the general science, with the names of those who have signalized themselves by the skill and perseverance evinced in their labours to perfect the science. But this course would be utterly incompatible with the plan contemplated, and with the time allotted for the duties incumbent upon us. Suffice it to say, that the time when the knowledge of our branch of the medical science began to attract notice and to be cultivated, was in the days of Hippocrates, about four hundred years before the christian era. To this great luminary, the reputed father of medicine, we are mostly indebted for the first intimation of a connection existing between the diseases of the body, and such as are primarily seated in the mouth.

This descendant of Esculapius, says an eminent writer, contributed largely to the promotion and advancement of the healing art in all its parts. To the knowledge which had been transmitted to him, he added that of extensive practice, and his no less extensive experience. "His attentive eye was attracted to every malady, and no symptom that accompanied disease was suffered to pass unnoticed or unexamined, even those of the teeth were made the subject of critical inquiry." The important hints and maxims which he left, and which are mostly embodied in his aphorisms, were found so essentially correct and true, that they were not only advocated and sustained, but confirmed by the practice and experience of his immediate disciples and successors, amongst whom the most eminent, perhaps, were Galen and Ætius, the former the great admirer of his genius and his works, the latter, no less an admirer of his extraordinary sagacity and professional skill.

When we reflect upon the extraordinary talents of Hippocrates, the age in which he lived, the uncommon display of skill manifested in his professional practice, and the invaluable legacy which he left to posterity in his aphorisms and other voluminous works, but above all upon the seemingly providential manner in which these works have been preserved through the long protracted ages of mental darkness, or stupid ignorance, to serve as unerring guides, or theoretical maxims, to the practiciens of the present time, in which neither their force or energy is lessened, nor their truth and correctness in the least diminished; we are lost in amazement, and ready to acknowledge that, with the exception of the records of Holy Writ, but few examples or parallel cases are left for our consideration.

It is by no means in accordance with the duty prescribed to us in the present instance, to indulge in a train of remarks upon the character and talents of this great man; but we claim your indulgence while we transcribe a few appropriate lines from a review of Dr. Marks' edition of Hippocrates, which is as follows, viz: "More than 2200 years have elapsed since the existence of Hippocrates, yet his writings have all been preserved entire *through* ages of revolutions and subversions of empires. The precious legacy to mankind, of his *wisdom* and *precepts,* has escaped the destructive hand of time, of *devastating barbarous invaders* and conquerors. Again of his works: "It was devised by consummate wisdom, dictated by long experience; the *facts* and observations it embraces are so fundamental, that they have proved an *unerring guide* in *all* ages, in *all* countries; hence *all* nations have, in common concert proclaimed them as *auricular axioms* of the healing art. Med. Rep. 7, hexad. 2, vol. 1, p. 265.

We now, for the sake of brevity pass over that gloomy waste in which science and literature languished, and the arts of civilization and refinement became almost extinct, and make an effort to collect the scattered facts that are calculated to afford us light and assistance in the further investigation of our subject.

We find then, that notwithstanding the low and discouraging state and condition of the arts and sciences, and especially that of medicine, during several centuries, the precepts of Hippocrates, of Galen, of Ætius, were still adhered to and practised in the various diseases of the mouth, and such as originated from, or depended upon the teeth. But enjoying, as they did those advantages, a very long interval of time elapsed between that of Hippocrates and Celsus, in which very little knowledge was acquired, or improvement made in the treatment of the diseases of the mouth; or if otherwise, but slight mention has been made of the subject, except of the various preparations that were employed, by different persons, for cleansing and preserving the mouth and teeth healthy and clean, such as powders, electuaries, elixirs, &c. &c.

In the eleventh century we find that Albucasis, an Arabian physician of eminence in that day, has given some details of operations, rather mechanical than otherwise, that were practised for the relief and comfort of suffering patients.

From, and anterior to that period, this as well as almost every other branch of the medical science, was considered as appertaining *exclusively* and of *right* to the medical practicien.

About the latter end of the fifteenth century, or the commencement of the sixteenth, the whole science as well as practice of medicine, was mostly left to the tender mercies of illiterate barbers, or to the capricious whims and visionary dreams of astrological mountebanks.

During the whole of the sixteenth century, much was done in clearing away the superstitious dogmas of alchymists, and the no less absurd notions of those who advocated the unity of disease, and the discovery of an universal panacea, or specific, for every disturbance which the human body is heir to.

Whilst the general science was making slow but manifest advances, and zealous efforts were made by a number of medical writers to improve the science, our own branch was by no means left out of view; but in connection with the general subject, was treated of by several, even in the latter part of the fifteenth century.

In most of the subsequent writers, and in those of the sixteenth century, and more especially the latter part, although no systematic work was written exclusively on our profession, no less than thirty-eight treatises, or works, were written and published, mostly by medical writers on diseases of infants during the period of dentition of the mouth, and the adjacent parts. In many of these, interesting and important facts were elicited; but as the authors, at that period, were mostly ignorant of the correct physiology of the teeth, and the surrounding parts, and the phenomena accompanying their development, no rational conclusions, or positive deductions could be expected while the subject remained veiled in obscurity; of course, all efforts at the treatment were the result of conjecture, consequently, seldom exempt from error.

The science, however, in every department, was still advancing, and at or about the commencement of the seventeenth century, the branch of dental surgery began to assume a prominent rank, as one requiring a separate and distinct management.

It seems proper to observe here, that in the view that has been taken, it is, by no means, intended that up to the period last mentioned, the science of medicine had previously remained in darkness, and that no notice or mention had ever been made of any thing connected with our profession. Far from it—it is intended to refer to that period when almost all the arts and sciences were enveloped in darkness, while the invaluable precepts of ancient writers lay buried amongst the rubbish of heathenish superstitions, unheeded and forgotten. Amongst these, we ought not, nor cannot leave out of view the precepts, and aphorisms of that great luminary, Hippocrates, the justly styled father of medicine, as already mentioned.

We shall now resume the subject as connected with that of dental surgery, which, as we have observed, in the latter part of the sixteenth century, but more particularly in the beginning of the seventeenth century, began to assume a different and more interesting aspect; so much so at least as to have engaged the attention of many eminent medical writers, naturalists, and particularly some whose pursuits have been directed to the treatment of the diseases of the mouth and teeth; amongst these was Laudemiey, of Paris, who from the knowledge he had acquired, and the celebrity which he enjoyed, was sent for to the court of Spain, in the year 1716, to perform a small operation upon the mouth of Philip V. then sovereign of that kingdom.

We are not aware that Laudemiey had ever written, or intended to write upon the subject of his profession; but we find that in 1723, he was acting in the capacity of dental surgeon to his Catholic majesty, Philip V. king of Spain.

At that period we also find, that Fauchard, a dental surgeon of Paris, was engaged in writing a work on the subject, and which was published in 1728, in two volumes; and in which was made the *first* attempt to systematize and treat methodically, the dental art, as a distinct and separate branch of the medical science;—hence he has ever since been considered, and justly styled the "Father of Dentists."

The ample and highly interesting views which Fauchard had taken, and the conclusions which, from long experience he had arrived at, seemed to present a new and widely extended field for exploration, and which was not long suffered to remain uncultivated; for such was the interest which his views had excited, and such their importance, when considered in connection with the welfare and comfort of human beings, that many were soon enlisted in the cause, with a zeal and perseverance scarcely equalled, and, perhaps, never surpassed by those who were engaged, at the same time, in an investigation and experiments in the higher branches of medical science: of such were a Bunon, a Tenon, Bourdet, Mouton, &c.; who with untiring patience, and for a long time were engaged in the great hospitals of Paris, where they were free to indulge in post mortem examinations, to the full and entire gratification of their curiosity, or that of their most earnest desires.

Few, very few indeed, have contributed more to the fund of professional knowledge, or have done more to enlarge the sphere of pathological information than these men.

We would, with peculiar pleasure, extend our views, and bring into bold relief, the names of others who have been alike co-workers in building up and establishing the character of our profession as a *legitimate* branch of the medical science; but the shortness of time, and the fear of trespassing too freely upon your patience, must be plead our apology.

It has been remarked, that up to the year 1716, no less than thirty-eight different works were published on this branch of medical science, and in the eighteenth century, such was the interest which the subject had excited, and such the zeal with which it was prosecuted, that no less than one hundred and fifty-eight works appeared, or were issued from the press in different parts of England, and on the continent of Europe.

Were we permitted from the view that has been taken, to draw any inferences respecting what *has* been done during the present century, so far as it has past, and of the future, from facts that are well known and established, we hazard nothing in saying that the nineteenth century at its close, will probably exhibit a far greater amount of knowledge of the subject, far more extensive researches, and laborious efforts to explain and comprehend some of the hidden mysteries not yet understood, than has appeared at any preceding period of time.

More than half of the *number* of works that were published in the last century have already appeared, and numbers, as well naturalists as medical practiciens and dental surgeons, are engaged in microscopical investigations, with a view to explain and establish, if possible, every physiological and pathological fact that is embraced in this branch of medical science, or that can be interesting to the medical philosopher, the naturalist, or the dental surgeon. Of such is Professor Rhetzius, of Sweden, Weber, Heidlebrand, Schreger, Wagner, Parkinja—Professor Owens, of England, Blandin, Nasmyth, of London, and others in France, and different parts of the continent of Europe.

From these facts, is it not evident that this branch of science is not only advancing, but that it has fully kept pace with *every other* branch of the medical science?

We would, in the next place, direct the attention to the mechanical and operative department of knowledge, of which, although *not in strictness* an indispensable requisite qualification of a dental surgeon, nevertheless, it constitutes an essential part of the profession, as it has hitherto been, and is at present generally practised.

In order to a full and correct understanding of the origin and progress of this branch of the profession, it would be necessary to carry our views back to the days of the ancients, when Ovid, in swelling measures, attuned the lyre to gratify his muse. But this is by no means compatible with our limited time. If we commence a review of the time of the invention and introduction of porcelain teeth by D. Chement Dubois at Sevres, and especially the time of Fonzi's improved mineral teeth, and fixtures for obviating the partial or total loss of teeth, and which were considered, at the time, as unequalled in any part of the world, the improvements have been astonishing, both in Europe and America. We have had frequent opportunities of seeing examples of both, and we are free to say, that it appears difficult, nay, almost impossible that any further advances or improvements can be made, that may be considered a nearer approximation to perfection, than that which it has already attained, *especially in this our own country.*

In the early part of this discourse we claimed, as of right what custom and general usage had long since awarded us, viz. the title of efficient cultivators of an important branch of medical science.

In most foreign countries, those who have directed their attention to the study and practice of this branch of medicine, are known as such by the medical faculty, and have been recognized under the legitimate and appropriate title of dental surgeons.

Those whose diligent attention and talents were devoted to the acquirement of a correct and critical knowledge, as well of physiology and pathology, as of practical operations, were considered by the faculty of medical practiciens, as cultivators in the same field, and whose opinions upon professional points were entitled to the most respectful deference, and whose skill was, in many cases, considered as essentially necessary as that of the general surgeon or physician.

This was particularly the case from the time of Fauchard, whose opinions respecting deep seated and obstinate diseases of the bones of the head and face were often consulted, and whose professional services were frequently called in requisition by the practiciens of surgery as well as that of medicine.

This custom we find was prevalent in the time and practice of the celebrated French surgeon Petite, and several of his cotemporaries; and of dental surgeons, Bourdet, Bunon, Tenon, and others; but more especially Jourdain, whose familiar knowledge and pre-eminent skill, distinguished him in the estimation of the medical faculty, as possessing talents of a superior order as a dental surgeon, and worthy of all confidence.

From the time of Jourdain to the present, professional dentists of this kind have not been wanting to give character and standing to the profession, and for which many of the medical faculty have evinced the most decided marks of deference.

The same spirit is evinced by the enlightened and intelligent of the profession, and the same degree of zeal is manifested throughout France, and several other parts of the continent, and such as affords an earnest, nay, a guarantee that this, our branch of the science, has hitherto not only sustained its character, but, encouraged and cultivated by the talents and influence of such as are at present engaged in the cause, its course is onward and upward with the general science, to the utmost attainable limits of perfection.

Let us, for a moment change our ground, and contemplate the state of our profession, not as dentists, in the common acceptation of the word, but of the branch of the medical science, which we cultivate, as it has, and still exists in Great Britain, in order to a comparison with that of France, and that of our own country. By this means we shall be able to form a correct estimate of the improvements that have been made by members of our profession in other countries, in a given time, and in that of our own.

In the year 1770, Thomas Berdmore wrote and published a treatise on the teeth, a work as justly entitled to pre-eminence in point of merit, as any one that had ever appeared in the English language. His standing in his profession was such as to obtain for him the confidence of his rightful sovereign, George the III. to whom he was preferred as "dentist in ordinary"—in the early part of his reign, and for ought he knew to the contrary, as long as he lived.

The preference bestowed upon Mr. Berdmore, together with the honour conferred at the same time, would naturally operate as a stimulus to exertion, on the part of others who may have been engaged in the same pursuits, under the expectation, or at least the *hope* of succeeding to the honour, and sharing the emoluments most probably enjoyed by Mr. Berdmore, in case his situation should be vacated.

But whatever exertions may have been made to promote or advance the profession by those who were, at the time, engaged in it; or whether, in fact, Mr. Berdmore himself was ever engaged in any efforts to inculcate a more extensive and correct knowledge of the natural history of the teeth, and of the various diseases incident to them and the neighbouring parts, we have not the means of ascertaining. We believe, however, that we are safe in asserting that, although a number of medical writers had been engaged in an investigation of the natural history of the teeth, long anterior to this period, no practising dentist, not even Mr. Berdmore, had ever endeavored to enlarge the sphere of his knowledge beyond the mere mechanical operations incident to the profession; nor are we aware that any efforts were made by any English writer, expressly upon this branch of the medical science, until undertaken by Mr. John Hunter, in the year 1771.

We may here pause a moment, and examine, with advantage, the difference in the state of the profession, as to both theoretical as well as practical knowledge, in England—in France—and in several parts of the continent.

In 1770, as we have remarked, Mr. Berdmore wrote and published his treatise on the teeth. In 1728, *forty-two* years previous, Fauchard had published his memorable works. From that period, to the time at which Berdmore wrote, a number of valuable works on the dental science appeared on the continent, viz: Bunon in 1723—Mouton in 1746—Lecluse in 1755—Bourdet in 1758—Bunon again, in 1759—and Jourdain's celebrated work in 1766—besides a number of others of nearly equal merit.

About the time that Berdmore wrote his practical treatise, Mr. Hunter was engaged in his work on the natural history of the teeth, viz: 1771. From that period, to 1798, the year in which Mr. Blake wrote on the natural history of the teeth, no other attempt was made that we know of, to enlarge the sphere of knowledge in this branch of science; nor until 1806, eight years subsequently, did Mr. Fox contribute his share to the general fund of that kind of knowledge, so essentially important and necessary to assist those who were practically engaged in operations so intimately connected with the comfort and welfare of countless millions.

Were we now required to assign a reason why the dental science, now so called, should have remained so long, and so far behind that of the same profession, in a number of the large cities on the continent, we might assign several; but we know of none so likely to operate as a check or hindrance, to a successful prosecution of researches in physiology and pathology, as, amongst others, that of a want of encouragement on the part of *those* whose *duty* it was to give countenance and encouragement to such as would, most readily have engaged in efforts of this kind for the special benefit of medical science generally.

And no one, perhaps, is more chargeable with this fault than Mr. John Hunter, who, when he wrote his "practical treatise on the diseases of the teeth," &c. in 1778—instead of encouraging practical dentists in the prosecution of physiological and pathological researches and experiments, with a view to the further development of the latent phenomena of this branch of the science, as it was supposed his writings were expressly intended for, he threw a kind of hindrance—a negative prohibition in the way, which was calculated to check the ardour of scientific research, by saying—"the diseases which may arise in consequence of those of the teeth, are various; such as abscesses, carious bones, &c. many of which, although proceeding *originally* from the teeth, are *more* the object of the *surgeon* than the dentist, who will find himself as much at *a loss* in such cases, as if the abscess or carious bones were in the leg or any other distant part." And further—"all the diseases of the teeth which are common to them, with the other parts of the body, *should* be *put* under the management of the physician, or surgeon,—but those which are *peculiar to the teeth,* and their connections belong properly to the dentist." Again—"I shall, therefore, confine myself to the diseases of the teeth, gums, and alveolar processes; which parts having a peculiar connection, their diseases fall properly within the province of the dentist. I shall, also, *purposely avoid* entering into common surgery; not to *lead* the *dentist beyond* his depth, and to matters of which, it is *to be supposed,* he *has not* acquired a *competent* knowledge."—Hunter, on the natural history of the teeth, pp. 2 an 3, intro.

Very kind, and very considerate, indeed, in Mr. Hunter, to avoid leading the cultivators of an immediate branch of his own profession beyond *their depth,* or into error! Kind, indeed, in Mr. Hunter, to avoid leading his countrymen beyond *his depth,* and into *matters* of which, it is to be *supposed,* he has not acquired a competent knowledge. Why, if Mr. H. would have condescended to have cast his eye across the channel, amongst his frog-eating neighbors, he would there have found the works of those whose names I have enumerated, and especially those of Jourdain, who was not afraid to lead the dentists of his country beyond their depth; but who, twenty-two years before, had written and published a work, in comparison with which, Mr. Hunter's natural history of the teeth, dwindles into insignificance—a work replete with valuable instruction, and which every surgeon, physician, and dental surgeon, in Europe or America, may read with great pleasure, as well as advantage, and which *every* professional man ought to possess.

Little did Mr. Hunter imagine that the very language which he was using to deter the dentists from overstepping the bounds of their immediate province, by attempting the treatment of cases, which not understanding, they were not competent to, that his very language would have the effect of stimulating them to exertions that have resulted in the rearing of a Blake—of a Fox—and a host of others, naturalists and dental surgeons, down to Rhetzius, Owens, Nasmythe, and many others, with whom, by reason of their professional acquirements, and knowledge in dental surgery, the first and most eminent medical men on the continent of Europe, and in the British dominions, are now free to associate with, and to *consult* in many cases, especially such of a professional character as are of an obscure or anomalous nature.

Thus, while the light that was shed from the pen of Fauchard, was being diffused over France and many parts of Europe, Mr. Hunter's talents were brought into action to arouse the spirit of inquiry amongst the dentists in England, who, in a few years elevated the profession to that degree of importance and usefulness which is now acknowledged and appreciated in almost every civilized community in the world.

Let us now, for a moment, withdraw our attention from those who have been, and are still labouring in the cause abroad, and examine the state and condition of the profession in this, our own country.

Here is a field of a vast extent, and of sufficient importance to engross the pages of an ample folio. Strange as the subject may seem, and improbable as it may appear, it is, nevertheless, true, that, although the dental profession had been long known and practised in Europe, and many valuable volumes had been written on the subject, and published to the world, little or nothing was known of it in this country until about the year 1780, or until long after Mr. Hunter's work had been published. For, although his work on the natural history of the teeth was published in 1771, and his second part, on the diseases of the teeth, in 1778, scarcely a copy of the work was to be obtained, or to be found in this country, except in the possession of some American physician, who, on his return from Edinburg, where he had been to complete his medical studies, had supplied himself with a copy. Two or three copies of Berdmore, a plain, but valuable practical treatise, likewise found their way to this country, through the same, or a similar channel. I know of but two copies that were brought to this country during the revolutionary war, and they, like those of Hunter's, were retained in the private libraries of those gentlemen who purchased them in England for their own private use.

In this state of things, the few who were engaged in performing the common operations in practice, (and but few others, especially of a difficult nature were attempted) were groping their way in comparative darkness, and but for some fortuitous circumstances, it could scarcely have been considered otherwise than as a state of palpable ignorance of every circumstance that was necessary to connect the profession of a dentist with the science of medicine.

The first hints that were afforded, or opportunities offered to any person to obtain a knowledge of the profession, was, we believe, through a French dentist, by the name of Le Maire, who offered his services to the public during the revolutionary war. We do not pretend to a correct knowledge of his history, or of the manner in which he found his way to this country; but believe that it was with the French troops, who came to our assistance in our revolutionary struggle. However that may be, he had probably acquired a knowledge of the profession in his own country, where it had long been cultivated, and was not without some pretensions to skill in practical operations, especially in transplanting of teeth from the mouth of one person, to that of another, and by which, as he frequently performed the operation, he enjoyed a very lucrative business. He, likewise, undertook to instruct some two or three persons in the profession, which may be considered as the origin or commencement of dentistry (vulgarly so called) in this country.

Nearly about the same time, or not long subsequent, a rage for theatrical performances brought a company of foreign performers to this country, one of whom, a gentleman of polite address and accomplished manners, by the name of Whitelock, was a dentist, and who had probably acquired a knowledge of his profession in England.

From these sources, (and some others which we shall have occasion to mention,) it may be said our profession derived its existence, and for some years was gradually advancing in importance and usefulness, in proportion as talent and skill were evinced on the part of those who were engaged in the practice. But almost from the first efforts that were attempted in the practice, the whole course of proceedings was as perfectly mechanical as that of any other business. Not a ray of the light of science had as yet shed a gleam upon the subject, that could give it the colour, and much less a claim to any kind of relationship to the science of medicine. Not until an opportunity was afforded to some one of the profession to peruse the works of Mr. J. Hunter, did the light begin to dawn upon the subject, so as to awaken a conviction that the object of pursuit was based upon and intimately allied to science, and constituted an important branch of that of medicine.

This, it is believed, was long anterior to the year 1790, about which time, and in fact *long before*, much had been written and published on the continent, but as it was all in a different language from our own, and the intercourse at that time very limited, but little if any material advantage to the new adventurers in the profession was derived from that source; and but for a chain of fortunate circumstances, we might have been left to feed upon the faulty, nay, *very* erroneous opinions inculcated by Mr. Hunter, to this day. The circumstances referred to are of the following nature, viz.—Amongst the physicians that emigrated to the French West India colonies, and particularly Hispaniola, were some, at least, who when about leaving their own country, were careful to select amongst their medical works, such as were likely to prove useful in every department of surgery as well as the practice of medicine.

Amongst them were some of the best works on the treatment of diseases of the mouth and teeth. When the unfortunate disturbances, which threatened the peace and quietness of the people of that ill-fated island, began to assume an alarming aspect, the physicians, as well as all others that could avail themselves of the opportunities offered, fled with their effects to this or some other country for safety. Amongst the medical works thus saved were some of the most valued authors on dental science, and which were submitted to the perusal of those who were alive to the importance of the subjects which they contained, and who were ready to devour their contents with an eagerness seldom evinced by a half-famished gourmand.

These works were replete with not only new and valuable information on professional subjects, but they referred the reader to other equally valuable authors, which were, as soon as practicable, sought for and obtained.

From these circumstances, and from this period we may date the epoch when a mass of light, which before had been, as it were, long obscured by an *impenetrable* cloud, burst upon the comparatively few votaries of our profession in this country, with an almost overwhelming effect, and soon began to awaken them to a sense of the low and inferior grade which they were occupying in the scale of dental surgeons; and to convince them of the necessity of still higher attainments and more exalted qualifications to entitle *them* to a rank amongst the zealous cultivators of an important branch of the healing art—I mean a more intimate and familiar acquaintance with our physical organization, or with physiology and pathology.

From the view that has been given, it is not to be supposed, and much less believed, that the profession had remained in a stationary condition from the time of its first introduction into this country to the time above alluded to. The lessons that were inculcated in the first instance, by foreigners, were deeply impressed, and there were soon found amongst us examples of native genius and talent, that were congenial with the most encouraging as well as successful culture.

In adverting to a few instances of this kind, we shall purposely leave out of view the living examples, and offer, with feelings of great personal regard, and with sentiments of deep professional deference, the justly merited tribute of respect to those whose names we take pleasure in enrolling amongst those who, in reality, were the efficient practiciens, and promoters of dental science in this our country—but whose names, whose talents, and whose exemplary characters are all that is left us to respect and admire; and more especially to imitate.

Amongst those of native origin, we shall mention the name only of Mr. J. Greenwood; a sketch of whose biography is to be found in the Journal of Dental Science. In early life, it seems he, like many of the sons of New England, evinced an energy of character, which encouraged and sustained him through the vicissitudes of the remaining part of his life.

Besides this essential quality, he was endowed with no ordinary share of ingenuity and mechanical tact. In this opinion we are sustained by the fact, that he must have commenced his professional career in the city of New York, about the year 1788 or '90; at the latter of which periods, we believe he stood alone in his profession, enjoying almost the exclusive patronage and confidence, not only of the inhabitants of that city, but of the *Father of his country*, George Washington, himself, and for whom he performed an operation, and executed an entire dental apparatus, which for ingenuity and mechanical skill, would have done credit to the most experienced of the profession in any country; and the more so, as we have reason to believe that it was the first attempt of the kind that had ever been made in this country; and, moreover, that he had *never seen* an example of the kind, either by a drawing or otherwise, to serve him as a model or guide. This specimen we have seen in his own office, and examined in his own hands.

This, from the novelty of the case, and from the very prominent standing and reputation of the person for whom it was performed, was sufficient to ensure to Mr. G. the confidence of the public—to establish his character and reputation as a dentist; but, moreover, to give to the profession an eclat that spread far and wide, and prompted many half desponding advocates for a *renewal* of long lost *juvenile attractions,* to resort to the toilet, and there to deliberate upon the sad alternative of submitting themselves to the *reputed tortures* of the dentist's mill, to be ground over, and made young again, at least in appearance.

Suffice it to say, (and that without levity,) that from his time, the advances by valuable improvements, in practical dental operations, were onward and rapid; and that too, by unlooked for and valuable auxiliary aid; for about this period, the importance and respectability of the profession was considerably enhanced by the auspices of the well known talents and abilities of the elder Mr. Gardette, who, after having obtained a valuable fund of professional knowledge, before leaving his own native country, (France,) came and settled in Philadelphia, where he soon experienced the most flattering encouragement for his services, and ample field for a display of his mechanical and professional skill.

Previous to, or about the time of Dr. Gardette's successful practice, a Dr. Spence, of Philadelphia, was likewise enjoying considerable confidence and reputation in his profession, as a dentist. With his commencement, or advances in skill or capacity, we have not been able to obtain as clear and satisfactory account as we could have wished. We believe, however, that he obtained his first instruction in the business from a French dentist, already mentioned, by the name of Le Maire.

At no distant lapse of time, the profession experienced another no less valuable, nay, very important accession of professional skill and talent, in the arrival of the late Dr. Edward Hudson, from Dublin, who likewise preferred Philadelphia for his future residence, and professional practice.

From such an unexpected, yet seasonable addition of acknowledged talent and respectability, it would scarcely fail of enhancing the value, and of ensuring the celebrity of the profession, and of its utility and importance to every class of society. Nor did the profession fail to experience this effect; nor was the public disappointed in its expectations.

The light that was now dawning upon us seemed to operate as a stimulus to exertions for preferment in excellence in other parts of our country; and which soon experienced an additional impulse, by the offer of the professional services of a Mr. Woofingdale, who arrived in New York about the year 1794 or '5, direct from the metropolis of England, and with strong recommendations for skill and respectability of character.

Thus, while the profession was dispensing its benefits and usefulness to the northward and eastward, through the diligent and successful practice of Messrs. Greenwood and Woofingdale, and some few others, the profession was advancing with rapid strides to usefulness and respectability, by the skill and ingenuity of Messrs. Gardette and Hudson, of Philadelphia, who were dispensing the benefits and example of their *superior* skill and professional talents to the west and the south, where they were at all times considered as worthy of imitation, and were even sought after with that view, and for that purpose; and when an opportunity of the kind was met with, it seemed to exercise a contagious influence upon such as were disposed to acquire a knowledge of the various operations upon the teeth necessary to constitute a dentist, in the estimation of a few only, at that period of time. In this way, or by these means, the number of nominal dentists has greatly increased, until from the facilities with which a smattering of the subject was obtained, the country, as at present, became overrun with empyrics, and unblushing pretenders.

We have thus far, and in this brief and imperfect manner, endeavoured to give some general ideas of the origin of our profession; of its gradual development; of its increasing importance, as an art, and of its wide spreading usefulness in foreign countries; but more especially in our own. That for a great length of time, it was considered in no other light than as a pursuit purely mechanical, and that the success in business depended very much upon the skill and address of the operator. And although in its nature and application, connected with, and involving *organized structures*, and living complex tissues, little or no attention was paid to the fact, nor was it considered necessary that a person engaged in practice, should have any knowledge of the anatomy of the parts to be operated on.

The time arrived, however, when this state of things was no longer to be tolerated. The profession was found to involve principles and parts connected with those of anatomy; and that it could not, nor ought not to be considered in any other light than as a *branch* of the medical science; hence it was treated as such by Fauchard and most of the subsequent writers on the natural history and diseases of the teeth.

We have remarked, that a knowledge of this fact was early seen, and attended to by several of the profession, and with so much and so decided advantages as to attract the attention, and merit the approbation of the medical faculty; who readily saw, and as readily encouraged the cultivation of this branch of medicine, as intimately connected with the general science, and as affording results highly beneficial to the general science, particularly in obstinate neuralgic affections growing out of, or depending upon, long continued local chronic inflammation in the neighbouring parts.

This view of the subject held out strong encouragement to such as stood prominent as dentists, to cultivate a more familiar acquaintance with physiology and pathology, for in so doing he enjoyed more frequent interviews, and a more familiar acquaintance with practiciens of medicine, thereby gradually introducing and establishing a line of distinction between such as could be considered in no other light than as mechanical dentists, and such as were deservedly entitled to the appellation of dental surgeons.

While the mechanical department was advancing; while new and valuable improvements were daily being made in instruments, and in the treatment of the various cases that occur in the operative department, this spirit of physiological research was widely spreading, and generally prevailing on the continent of Europe, long before Mr. Hunter's work on the natural history of the teeth was published.

We have observed, that on the publication of this work, the light of dental science first began to dawn upon, and awaken the attention of the members of the profession in England. It was soon increased in intensity, and interest, by the publication of the works of Messrs. Fox and Blake, which were soon obtained and circulated amongst the members of the profession in this our own country, thereby promoting and encouraging the spirit of inquiry and research, while at the same time, a knowledge of the interesting works that had been published on the continent, were being made known, and their contents assisting greatly, to extend and diffuse a correct scientific knowledge of this branch of medical science, not only amongst the members of the profession in this country, but amongst those of almost every other.

This may be considered the period when the light shone in copious measures upon this branch of medical science, and which, though long known and cultivated on the continent, was generally diffused amongst the dentists throughout England and America; and that to such a degree as to inspire the confidence, and meet the approbation of most reputable members of the medical faculty, and to induce them to admit the justness of the claim of the dental surgeon to a participation in the honours justly due to each and every one whose attention was engaged in cultivating a *scientific knowledge* of this, as well as every other branch of medical science.

They were free to acknowledge the correctness of the views of those, who by study and practice had become familiar with this branch of medicine, and to treat with respectful deference the opinions of dental surgeons upon cases of an obscure or doubtful character that occurred in their practice. Nay, more! We announce the fact, not with any degree of vanity or exultation, but with a peculiar innate gratification, that an eminent professor of one of our universities, in recommending to a numerous class of students to attend a course of lectures about to be delivered on dental physiology and pathology, observed that "a knowledge of the subject was *essentially* necessary and useful to a practicien of medicine, but which had not been, hitherto, recognized or taught in the medical schools."

We have thus far attempted an imperfect sketch of the origin, progress, and present condition of our profession, or of that of the dental science, and however unimportant or uninteresting it may appear in the public estimation, may we not for a moment pause and ask, is this that branch of science, or profession, that has been sneered at, derided and denounced, as too contemptible for the contemplation and pursuit of any rational or reputable person? We answer, yes! Moreover, is it asked, is this the branch of that noble, that divinely sanctioned science, that nearly five hundred years before the christian era, had engaged the attention and study of a Hippocrates, and *ever since*, most of the medical philosophers and writers, down to our own American Hippocrates and philosopher, Dr. Benjamin Rush, who recommended the subject to the medical faculty of our own country, "as one that will admit of much *curious* and useful information?" We answer, O yes. And as such we commend it to every member of our profession, as highly worthy of their contemplation and their zealous cultivation; not agreeable to a prevailing custom with many of the profession of the present day, but agreeable to a course, which, if diligently pursued and attentively studied, will insure an elevation that shall command the respect, not only of every member of our own profession, but of that of the medical faculty in every part of the world.

ARTICLE II.

Dissertation on the Management of the Mouth and Teeth. Read before American Society of Dental Surgeons, at their Annual Meeting in Philadelphia, August 11th, 1841, by L. S. PARMLY, M. D., D. D. S.

MR. PRESIDENT AND GENTLEMEN:—There is no subject which can occupy the mind of man, more full of instruction, or more rich in interest than that which treats of his own organization and preservation, the contemplation of which, while it lays low the pride of the sceptic, is eminently calculated to elevate and ennoble the best feelings of our nature.

It is in reference to public health that I introduce to your attention the care of the mouth and teeth; this branch of education, when properly understood, will supply the deficiencies under which civilized communities have long laboured, and will instruct you as to the means of avoiding and curing diseases of the gums by friction, and of preserving one of the greatest of all earthly blessings, "a sound, clean set of teeth."

If we take a survey of society, constituted as it is, we shall be forced to the conclusion that perfect cleanliness of the mouth and teeth is the last object, on which the attention of parents is fixed, and it is obvious that they have as much power to prevent inflammation of the gums, decay of the teeth and tartar by friction, as physicians have to prevent small-pox by vaccination, and yet how little is public attention called to the care of the mouth, the front door of the temple, not the sepulchre.

There is no truth better understood, and there is none which every day's observation more clearly proves to medical men, than that the loss of the teeth is greatly augmented since the introduction of knives and forks, by which the daily friction upon the enamel has been lessened.*

It is acknowledged on all hands that habit is second nature, therefore the practice should be so modified to the nature and the ability of the individual being, as to produce upon him with uniformity a profitable and beneficial result.

What means can be devised by which an unsuspecting generation may be freely admonished, that there is a noxious fluid contaminating all within its reach? The injury to the enamel is first discovered, and then the decay of the teeth will be in proportion to the age and quantity of mixed putrid matter remaining in contact with the perforated surface, instead of the quality of the teeth as erroneously supposed.

This false doctrine of hereditary weakness appears to have but one sure, unerring remedy, and that is to familiarize mothers, guardians and teachers with the patent apparatus I have invented, kept by most dentists, which will under all circumstances remove the enemy from the mouth and teeth, and in proportion as this truth is promulgated, practised, and duly considered, in the same ratio precisely will they revolutionize their habits to protect the teeth and gums against the attacks of disease, and expose the error of modern philosophy.

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*It is therefore the duty of parents to furnish children with means perfectly adapted to counteract this fashionable indulgence, so as to render them compatible with the full enjoyment of health, excellence and beauty.

The knowledge of using the means alluded to should be possessed by the mother, and society imposes upon her the task of directing the early habits and impressions of childhood.

Now, from what source has the mother received such qualifications? What has society done to impart a knowledge of preventing diseases of the mouth and teeth, and of the physical constitution of that human nature, the care and guidance of which has been entrusted to her? In what part of her education has instruction of this kind been introduced? Why pursue the inquiry, when it is obvious to all that no provision has ever been made to inculcate this important information to her, so indispensable to the welfare of infancy, childhood, mature age, and the evening of life.

There is perhaps no department of human knowledge more neglected than the physical management of youth, who need precept, example, and daily repetition, to enable them to preserve their bodily organs in a cleanly and healthy condition.

If parents would but reflect on the importance of this subject to the future health and happiness of their children, and would avail themselves of the means of obtaining information on a topic so interwoven with the best interests of society, how much good would be dispensed, and how extended the beauty and happiness of mankind!

There is a close connection between happiness and health, between happiness and longevity. Enjoyment is not only one of the ends of life, but it is the only condition of life which is at all compatible with a protracted term of existence.

/To suppose that dentition necessarily has its victims, and that the decay and loss of the teeth has no remedy, (or is a matter of necessity,) and that we are without the knowledge and means of checking this dreadful calamity, would be to impugn the most beautiful attribute of heaven's mercy.| It is not in keeping with the goodness of God, so to afflict civilized man. Reason bids us suspect, analogy and experience demonstrate that to our neglect is to be attributed this fearful and painful destruction of humanity.

The animal creation around us breathes the same atmosphere, and are subject to the same vicissitudes of season, and carnivorous animals eat similar food to man, and are scarcely if ever tormented by diseases of the mouth and teeth. The true secret of this exemption consists in the peculiar shape and frequent use of their teeth, and the lapping water which effectually removes all accumulations and secretions from the mouth before putrefaction takes place.

The knowledge of preventing decay and irregularity of the teeth is still in its infancy. Such has been the attention given to artificial ones, and the nice description and arrangement of the various productions of the earth, and so profoundly have we explored the arena of nature, that we have had but little time to think of the changes which take place in the mouth, demanding the minutest care, attention and watchfulness.

There is not a bone or muscle of any domestic animal that is not better understood than the teeth of man, who can pursue the concatenations of cause and effect, and embrace in his ken the system of the universe, yet the condition of his mouth and teeth are comparatively neglected, and least cultivated of all human knowledge.

To the philosophic mind it is a subject of keen regret, and indeed it is inconceivable that persons wise, and cautious on all other topics, should manifest such entire indifference in selecting the means of preserving the mouth and teeth from premature disease, pain, deformity and death.

It is my intention to use every proper effort to encourage a desire for knowledge of this kind. We are all directly interested in the spread of truths which, from their very nature, are well calculated to ameliorate the condition of man, and make firm and more lasting that common chain by which we are bound the one to the other.

The dentist who properly appreciates the responsibility he assumes, who feels that on his efforts, skill and judgment may depend the happiness of thousands, enters on the discharge of duty with a zeal and industry worthy his calling, and the great object of his life is to direct his patients and those who have the management of children in the right method of preventing the evils in which neglect and ignorance have involved most of the civilized world, (I mean) a fœted mouth and the causes which produce it, independent of the stomach.

Is the management of the mouth and teeth to be limited to the dental profession? Most assuredly not; it will be found useful to every human being by enabling all to take a rational and daily care of this two-fold operation of the human face divine, as our reasonable service.

The hope of contributing in some small degree to the acquisition of knowledge, which may prepare you to appreciate the important truth that inflammation of the gums, decay and looseness of the teeth are entirely our own fault, by the neglect of that inestimable virtue, perfect cleanliness of the mouth and teeth, which cannot be omitted long, without the infliction of cruel penalties and sacrifices, has induced me to present these remarks, and if so much of health and happiness depend upon the daily observance of this rule, are the proper means within the reach of the great mass of mankind.

This question finds its solution in the contemplation of the mouth and teeth, when viewed as an internal surface, subject to the influence of external agents, and in the preventive means not at hand and under our own control, and which may be transmitted to those you love and to posterity, the richest legacy that man can bequeath:

> "Be wise in time, 'tis folly to delay;
> Cast all your vile cosmetic drugs away;
> Exchange the shallow artifice of dress,
> For nature's more enchanting loveliness;
> And know that blooming health alone abides,
> Where chaste and temperate cleanliness resides."
>
> DENTOLOGIE.

Dental science, as connected with health and longevity, has of late become an object of popular attention, and I have met with a few of high endowments who are willing to devote their lives to this department of knowledge, being fully persuaded that they can in no way more efficiently appropriate the treasures they have accumulated than by furnishing and adapting the means to the popular mind in such way as to diffuse among the young people the elements of a science in which all are equally interested, in preventing the annoyances of our senses.

It is unfortunate that authors have not more generally exhibited in a systematic form, a clear and comprehensive view of the phenomena of life, the organization on which those phenomena depend, the necessary influence of physical agents on their production, and the laws, as far as they are understood, on which the action of those agents is based.

If this had been done we should not have to mourn over the ignorance of the community in general, not excepting even the more enlightened and educated classes, with regard to the analysis and shape of the enamel, its diamond texture and unlimited duration by its author, independent of blood or nourishment, the agents which produce decay, and the means by which such agents may be removed from its entire surface daily.

It is thus by pointing out that which has been omitted by others, and inviting your attention exclusively to the enamel of the teeth, which is quite out of the reach of nature's guardian care, and independent of the vital circulation even before it passes through the gums, and destined by its peculiar shape, size and strength to serve as instruments to the animal economy during the longest life. On these facts, I shall hope effectually to demonstrate not only the absurdity, but the positive danger of submitting its beautiful adaptation to chance.

On the management of the infant and his gums will depend his exemption from painful teething and healthy bodily organization and the mental powers as he receives his intellectual and moral aptitudes, taking, as they do, their origin in the predominant states of sensation at a period far earlier in the history of the human being than is generally supposed.

The period of infancy is remarkable for the rapidity with which the enamel is formed and perfected, the abveolar processes are in extreme activity of growth, and the formative predominates over the sentient life. A development of the perceptive organs characterizes this epoch; the brain begins to exhibit greater energy and manifest a wider range of action, the intellectual faculties of the helpless being are in active operation; the power of articulation, an evidence of the increasing energy, now shows itself;

a capacity for voluntary locomotion is also acquired, while passion and affection come into play with such constancy and force as to exert over the entire economy of the now irritable and plastic creature a prodigious influence for good or evil.

Now if it be possible to make correct moral perception, feeling, habit, and conduct a part of human nature as any sensation or propensity is, if this be possible for every descendant of Adam without exception, to an extent which would render all more beautiful and consistently virtuous than any are at present, preparation for the accomplishment of this object must be commenced early, as the tender age is susceptible of injurious impressions and dependent upon others for a proper direction of his infant thoughts and the preservation of his teeth and gums, to whom is this high trust generally committed? Should the guidance of childhood and the preservation of the teeth and the mind from the pernicious effects, either of neglect or bad example be left to the result of chance? We think not; common sense condemns the idea.

To train human nature perfect in all its parts, to direct and control the habits and conduct of the child, is one of the most important enterprises in which an individual can engage.

Little has this subject attracted the attention of civilized nations till now. Having been appointed by the American Society of Dental Surgeons to prepare an essay on the proper treatment of the gums and teeth from infancy to age, in order to secure their health and perpetuate their usefulness, I proceed to the arrangement of the subject under the following heads:

1. After more than thirty years experience in dental surgery, and minute observation, I am confident that the gums and teeth of every individual may by proper and daily friction continue in perfect health, independent of all the other organs of the human structure, and fulfil the benevolent designs of nature in masticating the food to the most extreme old age.

2. I consider the inflammation of the gums, the decay and loosening of the teeth as entirely the result of neglect by allowing foreign matter, fluid or solid, to become filthy, corrosive and destructive in quality, and then remaining in contact night and day, producing a chemical decomposition of the enamel before it is polished. This will be a momentous reflection on those who have

the care of children, as caries more frequently commence during dentition while the gums are loose, as verified in the decay of the wisdom teeth.

3. Having thus briefly alluded to a great and growing evil in civilized society, and intimated that this evil has its remedy, I shall now exhibit a simple course of treatment which will secure to every son and daughter that commences with their growth, a fair set of healthy teeth and gums, without "spot or blemish," during the natural life.

4. The mouth of the infant should be thoroughly washed with water, not only at birth, but always after sleeping, and with sufficient frequency at other times to prevent thrush, and preserve it from the influence of vitiated saliva, and the secretions of the mouth from passing into the stomach, which would engender worms and cold phlegms.

5. The gums of the infant during the whole period, from its birth to the appearance of all the teeth, should be rubbed by the finger of the mother or nurse many times in the day, for the purpose of giving them a firm texture, which will be easily absorbed by nature up to the scarf skin for the advancing teeth without soreness, pain or inflammation.

6. As soon as the teeth make their appearance, it should be the duty of the mother or nurse to clean them morning and evening with a small brush (and water,) and as they increase in number, floss silk, flax or hemp well waxed, should be regularly passed between them, moving it up and down a little under the gum, not only for the purpose of removing accumulations, but also to give a fine polish to the enamel, which is the natural protection of the bone and beauty of the teeth.

7. If by these means the temporary or changing teeth, only twenty in number, have been cleaned and prevented from decay, and the gums from inflammation, the next in succession are the four permanent molar teeth, or superior grinders, with their pointed, uneven crowns, appearing soon after the fifth year (with more fangs than any other) quite safe for cracking nuts and hard food that requires breaking up for the stomach. This class of double teeth, intended to receive the whole pressure and force of the jaws during the changing of all the front teeth, the most critical

epoch in life, therefore the same clean habit should be faithfully continued, as particular daily attention will prevent irreparable mischief, supersede the ordinary services of the dentist, who should inspect the mouth (or some qualified person) once a month, and then the daily care of cleaning it perfectly after the principal meals with the following instruments appear indispensable for comfort and safety. First a stiff brush of a suitable size, used freely over the crowns of the teeth, and moved briskly up and down as may be convenient to give friction to the gums at the same time. Secondly, The floss silk well waxed should be passed up and down on the right and left side of each tooth, a little under the gums, which will remove all accumulations from the interstices and necks of the teeth where the brush cannot reach. Thirdly, The tooth-polisher formed so as to be applied to the surface of the teeth where any discoloration may be seen, and near the gums or edges; the friction to be continued until the enamel is smooth. Fourthly, The double instrument for removing hard tartar and separating the gums during the growth of the teeth so as to make room to polish and clean the enamel thus exposed, and where the ordinary means cannot be applied with good effect. Fifthly, The tongue scraper, of whalebone, (well made) should be used every morning at least to free the surface and edges of the tongue from foul deposites, and discharge the glands and remove all secretions from the mouth which would injure its general health and prove detrimental to the stomach and lungs of the most vigorous temperament at any period of life. If these instructions are properly persevered in, and the means faithfully used, the gums and teeth of every shape and colour may be preserved through life by every class of people, with little expense, in all climates, and the breath from taint, a consummation devoutly to be wished. In conclusion we will remark, that this state of habits and practices would soon be realized in every well regulated family, if such persons would but reflect on the union and conformation of the teeth, gums and alveoli, as the duration of each depends on the healthy condition of all. How just and applicable are the memorable words of Washington to the different organs of the mouth, "United they stand, divided they fall." Now, as inflammation of the gums causes disease and a wasting away of the alveoli, and this absorption loosens the teeth and involves the whole in disease and ruin, unless the proper means are used as directed. By one thought, Columbus found out the way to make an egg stand up, so we, by adding a little patience and practice will soon find out the right way of keeping the teeth, gums, alveoli, and their fibrous adhesions free from disease, which the old school has not been able to accomplish with its philosophy of two sides. Be not discouraged or deceived in this matter; each tooth has four sides and delicate adhesions, therefore frictions must be used daily to insure their union, and then you will find the enamel a time-proof, unchangeable substance in the summer's heat and winter's cold, the variations of diet and medicine even during fever if kept wet in its pure element, saliva; neither will it weaken by the natural wear of time or place, provided there be a full set of teeth, and alike impregnable to decay where daily friction is maintained on the crowns and four sides of each tooth. Interrogate a mother who has been afflicted with diseases of the mouth and teeth, and witnessed the distressing anguish of her children during dentition, she will tell you that the value of the preventive means could not be estimated; that they are beyond all human appreciation. If this knowledge came to us spontaneously, or was an instinct, parents and nurses would be readily excused, but as it is, they should be held responsible for all the accumulations remaining in contact with the teeth and gums of a child more than six hours, which corrodes and taints the mouth during the first and second dentition or period of culture. The omission of this subject from the ordinary courses of education cannot be because it is without interest, nor because nothing worthy of being communicated has been discovered respecting this management, neither can it be that there is a difficulty in the exposition of what is ascertained of error or real utility since the mind is the subject on which all education is intended ultimately to act, and the instrument through which it must effect whatever influence it exerts, hence no man doubts the importance of a true knowledge of the mental phenomena and of the laws by which they are regulated, and the care of the enamel, the casing of the human ivory of which we have the sovereign and unlimited control, invites to practical application and meditation, daily and hourly, of the highest moment in favour of economy, health, beauty, strength and longevity, besides being an auxiliary to every art, science and accomplishment in society. Finally, the opinions I have now suggested, if not sustained, on this important subject, are founded on practical experience. If, then, health can be improved and disease averted by means so easy and simple, if the growth of the body and the enjoyment of life and comfort can be so materially promoted in like manner, if the symmetry of the countenance, the improvement of the voice, and a more complete enunciation can also be effected by means so easily attainable, who would not be tempted to adopt this plan, thereby establishing in their highest perfection, a mind unfettered by constant sources of irritation, and a body impervious to those tortures, which, with all the vigour of electric shocks, are darted through the medium of the nervous system from a disordered mouth to the remotest part of the frame, distressing in infancy, miserable in youth, and mortifying the remainder of life, in spite of all the ligamentum substitutes.

Friends,—the universal knowledge of these facts will render our professional labours less irksome, and will probably increase them four-fold in renewing the teeth and gums from the danger to which they are hourly exposed, where friction has been neglected, the principal cause of the dilapidated condition of the teeth, even among sailors and soldiers, as well as the fashionable and opulent members of society, a predicament so dependent and slavish will certainly rouse this favoured generation to make an effort for personal enjoyment and national renown, and thus achieve a victory over error which will be more important in its results than any other ever has been since history commenced, in affording protection to God's master-work within the reach of all intelligence when ever taught the secrets.

ARTICLE III.

A Physiological and Pathological Inquiry concerning the Physical Characteristics of the Human Teeth and Gums, the Salivary Calculus, the Lips and Tongue, and the Fluids of the Mouth; together with their respective local and constitutional indications.

Read before the American Society of Dental Surgeons, at their second annual meeting, held in Philadelphia, August 11, 1841.

By CHAPIN A. HARRIS, M. D., D. D. S. Professor of Practical Dentistry in the Baltimore College of Dental Surgery.

Mr. President and Gentlemen :—

WILLING to contribute to the extent of my humble abilities, to promote the object of your association, I accepted the appointment with which you honored me at your first meeting, to prepare a "dissertation on some subject connected with dental theory or practice;" but the little leisure afforded from arduous professional and other duties, has prevented me from accomplishing the task, in as full and perfect a manner as I could have wished. Written in haste, without time for revision or correction, the paper which I am about to submit to your consideration, is, I am aware, far from faultless. The subjects embraced in it, though, perhaps, somewhat novel in their character, are, nevertheless, important; and if the imperfect manner in which they are here exhibited, meets your approval, I shall not regret having complied with your wishes.

INTRODUCTION.

The means for the prevention and cure of disease, have, perhaps, been studied with more persevering and laborious industry, than any other branch of knowledge that has ever engaged the attention of the human mind. They have been sought by the learned and wise of almost every age and nation. With a view to their attainment, the vegetable and mineral kingdoms have each, in turn, been explored. Almost every flower, leaf and root of the former, and metal and earth of the latter, have been carefully analyzed, and the medicinal virtues of the components of each, anxiously tested. Nor has the pursuit stopped here. Anatomical and physiological investigations have been called into requisition.

Tissue by tissue, our physical organization has been patiently and toilsomely unravelled—its functional operations, both in health and disease, and the laws that govern them, attentively studied; and though neither an exemption from, nor a perfect contral over, this common enemy to our race, has been obtained, the inquiry has not proved fruitless. But, great as have been the triumphs of medicine, there still remains much to be learned. Research, experience, and observation, will continue to elicit new truths, and throw additional light upon every department of the healing art.

This is essential; for, operated upon as we are, by a multitude of surrounding influences and causes, our constitutional temperaments and tendencies, are constantly changing, and, consequently our liability to particular forms or kinds of disease, is correspondingly increased or diminished.

These changes have been, and will continue to be noted. Fact upon fact, will accumulate, and as past errors and false notions shall be exploded, correcter views, both in theory and practice, will be established. From year to year, will the knowledge of disease, and the means of its prevention and cure, be more and more augmented; and, while, by reason of man's fallen nature, we can never hope to banish it from the world; it is no more than the part of sound philosophy, to expect that an increased mastery over it will continue to be acquired. The science is progressive; its advance is steady, though every year does not produce an Hippocrates, a Galen, a Celsus, a Paré, a Fauchard, a Hunter, a Jenner, a Blake, a Fox, or a Rush; its course is, nevertheless, onward; and while every now and then a mighty genius appears, to astonish the world with his dazling and gigantic powers of intellect,—seeming to obscure, for a time, the rays of all lesser lights, it has numbered among its cultivators hundreds of men of a high order of talent, who have laboured in the cause with no less zeal; and to them its present state of perfection is, in an eminent degree, attributable. At the present time, both the dental and medical professions are adorned with a greater array of talent than they ever were at any former period.

Though charlatanism, in all the departments of the healing art, as in days of greater ignorance, continues, with unblushing impudence, and voracious appetite to stalk abroad in open day, and prey upon the pockets of the credulous, the advocates of scientific truth and the real lovers of mankind are becoming more and more numerous, and with ever fresh, accumulating and persevering zeal, are labouring to acquire a still better and more perfect knowledge of the phenomena, and cure of the multitudinous maladies incident to the organism of man. As the fruits of their labour, every day proclaims some new triumph, either in one or other of the branches of medicine. In surgery, operations are now almost hourly and successfully performed, that were not even thought of ten years ago. Congenital deformities that were then regarded as irremediable, are now, by the mere division of a muscle or tendon, with the greatest ease and safety removed.

But, while surgery has thus been reaping rich and imperishable laurels, the other branches of medicine have not lagged behind. They, too, have achieved new victories—acquired fresh honors. The recent improvements in general pathology and therapeutical agents, have contributed, in the treatment of disease, to the most happy results. Unlike, however, the brazen-faced and selfish harlequin, who, for fear of exposing his empty pretensions, keeps whatever meagre knowledge he may, perchance, possess, closely locked within his own breast, the true cultivators of the science, no sooner make a discovery which they deem of value to the well-being of their fellows, than they promulgate it to the profession, and to the world. For instance,—had Jenner, the discoverer of the vaccine virus, withheld the secret from the world, he might have commanded a large part of the wealth of the whole globe. The discovery was one in which the welfare of the whole human family were most deeply interested; affording, as it does, protection from one of the most loathsome and destructive maladies that was ever visited upon mankind; and he, with the most noble and praiseworthy philanthropy, chose, rather than to enrich himself in that way, to remain in comparative poverty. It is to the promulgation of the discoveries that have been made, and the publicity that has been given to the results of the experience and observation of those who have occupied themselves with the calling, that the art of medicine is enabled to alleviate so much of human suffering. Concealment is the secret of the success of empiricism, but the man of genuine worth fears not to submit his pretensions to rigid scrutiny. Based upon scientific truths and sound philosophy, he does not fear to have them examined, nor does he grudge others the knowledge which he possesses, but rather seeks to disseminate it as widely as possible. Facilities for its acquisition are placed within the reach of almost every one: elaborate works on the various branches of the science, and periodicals devoted to it are daily issued from the press. Public institutions too, for instruction in it have been established in almost every part of the world, so that, while the exercise of the duties of the physician may be said to be confided to only a few, nearly all may, to a certain degree, acquaint themselves with, at least, the general principles of the art.

Thus publicly has medical inquiry been conducted, its results made known, and thus has the science flourished; but while most of the branches of this noble profession have been fostered by learned associations and legislative enactments, there is, at least, one, which has not been so highly favoured. It has had greater difficulties to contend with, and if it has in any degree kept pace with the others, it is because of the exertions of a few, who have applied themselves to its culture with a perseverance that has never faltered. I allude to dental surgery. This branch of medicine, though it has heretofore attracted much less attention than any of the others, has nevertheless, attained, to a very high state of excellence, and it is beginning to assume a greater importance; its value is becoming better known, and the same means are now being employed for its more rapid advancement, that have contributed so largely to the perfection to which the other branches of the curative art have been brought. The formation of the society which I now have the honour to address, and at whose instance these remarks are made, may be mentioned as one, and not among the least of the means that have been resorted to for the accomplishment of this desirable object; and that it will contribute very largely to it, if its designs be fully carried out, no one can hesitate to affirm. But the efforts of this association do not constitute the only means that are at this time in operation for the improvement of this branch of the science, others equally valuable and effective are in operation; but of these it is not my purpose to speak at this time; yet I cannot allow the occasion to pass, without briefly adverting to the information with which we are at present possessed, and in doing this, it will be necessary to refer to the progress and present condition of the literature of the art.

With the early history of the progress and condition of the art of the dentist, we know but little, so that whatever knowledge of it, is at present possessed, it is not an inheritance from antiquity, but is the result of modern research, inquiry, and observation. We know that it was practised in ancient Egypt, and *Hippocrates*, who is styled the father of medicine, notices the dentition and some of the diseases of the teeth, and, we are told by Ambrose Paré, a celebrated French surgeon, that he even described the method of inserting artificial teeth. That this operation was common in Rome anterior to the christian era, we have conclusive evidence. But such of the writings of those of the remoter ages, whose attention was directed to the dental organism, as have survived the wreck of time, and are now to be had, only go to show, that their knowledge of the teeth, their disease, and prosthesis was exceedingly crude and imperfect. To notice any of their opinions then is unnecessary, and more especially so, as they do not accord with the generally received doctrines of the present day. Although dental anatomy, pathology, and therapeutics, had made some progress previously to the eighteenth century, it was not until about the commencement of this, that the art of the dentist attracted much attention, or assumed a distinctive character from among the other branches of medicine.

In 1728, Fauchard published his famous treatise, entitled *Le Chirurgien Dentiste*, and notwithstanding the difficulties under which he must have laboured in the procurement of materials for his work, in consequence of the paucity of the knowledge of the period at which he wrote, he has treated, and that too at greater length than almost any subsequent writer, on nearly every subject necessary to be embraced within the professional education of the dental surgeon. It is comprised in two 12mo. volumes, making altogether upwards of nine hundred closely printed pages, and though more recent research and experience has shown many of the theoretical opinions of the author to be incorrect, and greatly improved upon the plan of practice pursued by him in the treatment of the maladies of the mouth, yet it cannot be read without profit, or fail to command admiration. It is the result of extensive and laborious research and long and attentive observation, and contributed in an eminent degree, by the spirit of inquiry that it awakened, to the perfection to which the art has at present attained, and justly, therefore, has the author been styled the "*father of modern dental surgery.*"

Besides this work, many others appeared, not only in France, but also in England, Germany, and other countries during the eighteenth century; and, among the most distinguished of the writers on adontology of this period, the names of Bunon, Bourdet, Jourdain, Berdmore, Hunter, and Blake, may be mentioned. There might also be added to this list upwards of a hundred and twenty others, but previously to the commencement of the nineteenth century, the treatment of the diseases of the maxillary organs was not very well understood, nor had the manner of substituting artificial, to supply the loss of the natural teeth, attained to much perfection. The works, therefore, that issued from the press anterior to this time, while they threw much valuable light on the anatomy and pathology of the dental apparatus, contained but little correct practical information; but, as the knowledge of the structure and diseases of the teeth advanced, more rational methods of treatment began gradually to be adopted, and in the space of a few years, a greater and more thorough control was had over the maladies of these organs, than has ever been possessed over those of any of the other parts of the body.

With the commencement of the present century a new era began to dawn upon the dentist's science. The inaugural dissertation of Robert Blake, on the structure of the teeth of man and other animals, published in 1798, was but the precursor of a host of other works on all the parts of the dental art. The origin, formation, structure and dentition of the teeth, the means for their preservation, and the prevention and cure of their diseases, together with the best methods of supplying their loss, began from this time to be studied with increased interest and attention. Every department of the subject was submitted to more thorough investigation, and the research has been continued with unabated zeal down to the present time.

As in the earlier history of dental surgery, so still the French continue to be its most zealous cultivators. In 1800, Professor *Baum,* published a very elaborate treatise on first dentition and the diseases that accompany it. This was a prize essay, and while, perhaps, it is the best work that has ever appeared on the subject on which it treats, it is far from being faultless. *Laforque,* published a work on the theory and practice of the art of the dentist in 1802, which contains some correct practical information, but like Professor Baum's on first dentition, it is not wholly free from errors. It is, however, the best work that had appeared at the time of its publication. The same author published in 1806, a treatise on the semiology of the mouth, which I shall have occasion hereafter to refer to more at large, and in 1808, a series of articles on the diseases of the teeth, and in 1809, a dissertation on first dentition. He was an attentive and for the most part, a very accurate observer.

Duval, is also an author of considerable eminence. In addition to being an acccomplished and elegant writer, he was thoroughly read in dental science. In 1802, he published an essay on the extraction of the teeth, or rather, on the accidents consequent upon that operation; in 1803, he published another on odontalgia, and in 1805, a very interesting work entitled "Le dentiste de la jeunesse." Prefacing this last, is a paper entitled "Councils of the Ancient Poets," on the preservation of the teeth, in which no little research and ingenuity is displayed. In 1820, he published a small work on second dentition, and in 1828, a treatise on mechanical dentistry. Besides these, he is the author of several other well written papers on the teeth.

In the same year (1805,) in which Duval's "Dentiste de la jeunesse," appeared, *Gariot,* published a treatise on the diseases of the mouth, and in the year following, *Leroy* (*de la Faudiguere*) published a work on the diseases of the gums.

In 1807, a work entitled "The Art of the Dentist," by *Maggiolo,* was issued from the press. This treatise was quite popular in its day, and is now held in some estimation as a work of reference.

The next work which I shall mention, is entitled "Odontology," and is from the pen of that accomplished dentist, *C. F. Delebarre.* This work abounds with much valuable and correct information, but is not free from faults. It was published in 1815. The same author published in 1819, his celebrated treatise on second dentition, which is probably one of the best works on that subject that has ever appeared, and besides, treating fully and at length on the dentition of the adult teeth, it has one chapter on salivary calculus, and one on the semiology of the mouth. The same author, the year following, (1820,) published a treatise on mechanical dentistry, illustrated with forty-two plates, and in 1826, a supplement to his treatise on second dentition, a work of upwards of eighty octavo pages. To the pen of Delebarre, the literature of dental surgery is probably as largely indebted, as to that of any other individual, and while many of the views which he advances are susceptible of easy refutation, his opinions are for the most part correct.

Lemaire, is also an author of some note. He published in 1816, a manual on the anatomy and physiology of the teeth, and in 1822, a treatise on dental physiology and pathology.

Serres, an able and ingenious writer, published a treatise on the anatomy, physiology, and dentition of the teeth in 1819, that has attracted considerable attention. Many of his physiological opinions have been severely animadverted upon, and the justness of his claims to anatomical discoveries which he pretends to have made, questioned.

The improvements in mechanical dentistry have fully kept pace with those in the other departments of the profession, and not among the least of these is the manufacture of incorruptible artificial teeth from a combination of earthy and mineral substances. Of this invention, as well as that of many others in the art, the French are entitled to the credit. Besides several able and well written papers that appeared on this subject in the early part of the present century, *Audibran*, published in 1821, a very full treatise upon it. These teeth, however, have been brought to greater perfection in America than any other country.

In 1825, *F. Cuvier*, published a treatise upon the teeth of mammiferous animals considered in their zoological characters, with one hundred plates. To the surgeon dentist, this work is interesting only in a physiological point of view.

Meil, published a work of considerable merit in 1826, on the direction of the secondary teeth, and in 1828, ***Rousseau,*** published his famous treatise on the comparative anatomy of the teeth of man and other animals. This is probably one of the best works of the kind extant. It is well written, and characterized by great depth of research; and previously to its appearance, in 1820, the same author published a dissertation on first and second dentition.

In 1828, also, ***Maury,*** published an excellent treatise on all the parts of the art of the dentist, illustrated with forty plates. Two other works by the same author appeared several years before this.

A very valuable treatise on dental anatomy by Professor Blandin, was published in 1836. This work, though not large, deserves to be ranked among the first upon the subject on which it treats.

To the foregoing enumeration of works on the teeth, twice as many more might be added, but the mention of these will suffice to show the range which the study of odontology has taken in France since the ushering in of the present century.

Leaving the French school, it may be well to examine the progress which the science has made during the same time in Great Britain; and if I mistake not, the inquiry will show that, although its advance in France has been rapid, it has been little less so there. As early as the year 1803, the first part of ***Fox's*** celebrated treatise on the "Natural History and Diseases of the Human Teeth," appeared, which, in 1806, was followed by the second part. This work has held a justly deserved high place in the literature of dental surgery. It has been quoted from by almost every subsequent writer, and on the anatomy and physiology of the teeth has been improved upon but very little. On the diseases of the teeth, while the doctrine set forth by the distinguished author is maintained by several very able European writers, it is denied by others of equal acumen and ability. Though its advocates have displayed no little talent and ingenuity in its support, its opponents have adduced arguments and facts against it, that would seem to set all doubt upon the subject at rest. Therapeutical dentistry was not very well understood at the time of the publication of this work, it contains, therefore, but little information of value on the treatment of the teeth. Of the estimation, however, in which this work is held, some idea may be formed from the fact that it was translated into French in 1821, by Lemaire.

Four years after the publication of Mr. Fox's work, a treatise by *Fuller*, on the structure, formation and management of the teeth was issued from the press, and the year following, a volume by *Joseph Murphy*, entitled, "Natural History of the Human Teeth," with a treatise on their diseases from infancy to old age, was published. These works, though better suited to the general reader, than the professional dentist, are not to the latter devoid of interest. In 1819, a treatise by Mr. *Bew*, appeared, and in 1823, Gerboux, published a work on the diseases of the teeth.

But one of the best works that has issued from the English press on dental pathology and therapeutics, is from the pen of that able and accomplished practitioner, *L. Koecker*, M. D., and is entitled, "Principles of Dental Surgery." Though perhaps the author may have incurred the displeasure of a few, by the free manner in which he denounces empiricism, his work is nevertheless valuable, and has doubtless contributed in no small degree, to the success that attends the present mode of practice in the treatment of maxillary diseases. In 1828, he published a work on the diseases of the jaws, and in 1835, an essay on "Artificial teeth, obturators and palates."

Mr. *Fay* published in 1827, a work describing the mode of using forceps invented by himself for the extraction and excision of teeth. The advantages proposed by this last operation have not been realized. For obvious reasons, it has become necessary to abandon the practice. In 1828, *J. Patterson Clark* published a small treatise on the diseases of the teeth,—advocating the doctrine that dental caries is the result of the action of external corrosive agents.

The next work which I shall mention, is one that is very favourably and extensively known. I allude to the treatise on the anatomy, physiology and diseases of the teeth, by Mr. *Thomas Bell*, an able and highly accomplished writer, which was published in 1830. A work on operative dentistry, of considerable merit, by Mr. *Snell*, was published in 1831, and in 1835, Mr. *Robertson* published an excellent treatise on the diseases of the teeth, in which he maintains the theory that their decay is attributable to the decomposing action of external solvents.

Mr. *Alexander Nasmyth*, a gentleman of unquestionable ability, and a fine writer, has recently published an historical introduction to a work which has not yet appeared, on the "development, structure, and diseases of the teeth." What the author's views are upon these subjects, are not made known in the part of his work now from the press. That his treatise will contribute very much to enrich the literature of dental science, no one can hesitate to affirm. Curiosity has at least been awakened by the part that has already appeared, and the remainder is looked for with no little impatience.

The last English work which I shall mention as having been published within the last forty years, is from the pen of Mr. *Jobson*, and treats upon the anatomy, physiology and diseases of the teeth. It was published in 1835, and is a work of some merit. To this list many others might be added. It will be seen, however, from those already mentioned, that the progress of dental surgery in England, since the year 1800, has nearly, if not quite, kept pace with the advance of the science upon the continent.

In Germany its progress has been less rapid, yet it has there attracted considerable attention; and from that country a number of works have emanated.

The researches of Professor *Retzius*, of Sweden, have excited much attention in Europe, and though they do not go to confirm previous opinions in regard to the structure of the teeth, they have nevertheless thrown much light upon the subject. They were conducted upon an extensive scale, consisting of microscopic examinations of the teeth of man, and those of a great many other animals, and go to prove the structure of these organs to be tubular. A translation of the account of his microscopical researches may be found in Nasmyth's "Historical Introduction" to his work on the "development and structure of the teeth." An account of the researches on the same subject of *Purkinje* and *Müller*, is also contained in the same interesting work.

In America, and especially in the United States, though there has not been as much written on the science of the teeth as in Europe, and notwithstanding the charlatanism of the profession in this country, its advance has not been less rapid; and, there is not perhaps any country in the world, where the duties of the surgeon dentist are more successfully exercised. I might also mention a number of very valuable works and papers that have emanated from American dentists, and which, it may be, would not suffer by comparison with many of the best European dental publications; but having already extended this part of my subject to a greater length, than I had at first intended, it may not be well to refer to them in detail, and besides, the occasion is not, perhaps, the most proper. Let it suffice to say that efforts more vigorous and better calculated for the improvement of the art, than those which are in progress here, are not in action in any part of Europe.

From the foregoing brief and imperfect expose of the progress of this department of science, some idea may be formed of its present condition, and of the extent of the range of inquiry upon it; and from this it will be seen, that it, as well as the other branches of medicine, has been a subject of much investigation. For the last half century, at least, its advance has been steady, and at no previous period of its history, has it been studied with more persevering industry than at present.

But notwithstanding the perfection to which it has been brought, and the inquiry that is now abroad upon the subject, I cannot but believe, that the success of the dental practitioner, in the treatment of the diseases committed to his care, would be greatly increased, by a more thorough knowledge than is generally possessed of the physical characteristics of the several parts of the mouth. The general practitioner might also profit by the indications that are to be found in the appearances that are here exhibited.

Regarding a knowledge of the physical characteristics of the mouth then, as of greater importance than is usually supposed, the remarks which I shall submit to the consideration of the "American College of Dental Surgeons," on the present occasion, will be principally confined to this subject, and not so much that they will supply any *hiatus* that may exist in American dental or medical literature, as that they may be instrumental in awakening inquiry upon it, and in inducing some one more competent than myself to take it up, and treat upon it more at large.

Upon the physical characteristics of the mouth, little has been said by American or English dental or medical writers; and for whatever information the author of the following inquiry may possess upon the subject, apart from what he has gathered from his own observations, he is principally indebted to French authors. From the writings of Laforque, Delabarre, and Mahon, he has derived much benefit; and to them, though he does not concur in all the opinions which they have advanced, he takes pleasure in acknowledging his indebtedness. The most of the pathognomic signs which he has mentioned as belonging to the tongue have been described, together with many others, by professor Schill, in his treatise on semeiology.

GENERAL CONSIDERATIONS.

The susceptibility of the physical organization of man, to morbid impressions, differs in different individuals. In some, its functional operations are liable to be deranged from very trifling causes, while in others, they are much less easily disturbed. Nor do the same causes always produce the same effects. The susceptibility and tendency of the organism or part upon which they act, determines their character; and this is true, both with regard to constitutional and local diseases: with the physical structure generally, and all its parts separately considered, but with none more so than the teeth, gums, and alveolar processes. The teeth of some persons are so susceptible to the action of deleterious agents, that they no sooner emerge from the jaws, than they become involved in general and rapid decay, while those of others, though exposed to the same causes, remain unaffected through life. A similar difference of susceptibility exists, also, in the parts within which these organs are contained.

With the teeth, these differences of susceptibility, to be morbidly affected, are implanted in them at the time of their formation, and are the result of the different degrees of perfection with which this process is accomplished; and, as I have remarked on another occasion,* I repeat, in proportion as these organs are perfect, their capability of resisting morbid impressions is increased, and as they are otherwise, it is diminished. This is true of every part of our being; but as the teeth are formed, so they continue, except they be impaired by disease. We must qualify this remark, however, by observing that they gradually acquire a very slight increase of density, whereby their liability to this is correspondingly lessened.

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* See my Treatise on Dental Surgery.

Not so, however, with the other parts of our physical structure. They may be innately delicate, or imperfectly developed, and afterwards become firm and strong, or be at first healthy and well-formed, and subsequently become impaired, and, in proportion as they undergo these changes, their susceptibility or tendency to disease is increased or diminished. But the teeth are not governed by the same laws, neither physical nor vital, that regulate the operations of the other parts of the animal economy. Not only is the manner of their formation, but their diseases also, are different. The other tissues of the body, not excepting those which are identical in structure with these, are endowed with recuperative powers, whereby an injury sustained by them may be repaired by their own inherent energies, but the teeth do not possess such attributes.

Assuming these propositions then to be true, and that they are, especially those with regard to the teeth, I shall endeavour to make appear, it becomes an object of no trifling importance to discover the signs, if there be any, (and that there are, I think, I shall be able to show,) by which the susceptibility or tendency of the human organization to disease, may be determined. But to do this, except in so far as the teeth, gums and alveolar processes are concerned, is not the object of the present inquiry, yet in the prosecution of the task that has been imposed upon me, I may take occasion to advert to certain constitutional, and other local tendencies that are indicated by the appearances and condition of the dental apparatus, the other parts of the mouth and its fluids.

M. Delabarre, affirms that by an inspection of the teeth, we can ascertain whether the innate constitution is good or bad, and my own observations go to confirm the truth of this opinion; but as this author adds a little further on, these are not the only organs that should be interrogated. The lips, the gums, the tongue and the fluids of the mouth should also be examined, to discover the health of the organism, and ascertain whether the original condition of the constitution has undergone any change.

Those who have not been in the constant habit of closely observing the appearances that are met with in the mouth, may be somewhat sceptical in regard to the information derivable from them. concerning the constitutional health, but those who have studied them with care, will not hesitate to assert, that they are, in very many instances, by far more certain and accurate, than any which can be obtained from any other signs. For example—the periods of the ossification of the different classes of both sets of teeth being known, we are enabled to discover whether the original or innate constitution was good or bad by the physical condition of these organs, for as the functions of the organism were at this time healthily or unhealthily performed, they will be perfect or imperfect; or in other words, their texture will be hard or soft.

In a treatise, entitled "*De dentitione*," attributed to Hippocrates, but with how much truth I am unable to determine, it is said, three periods of ossification are ascribed to the teeth—the same also, is acknowledged by M. Baumes. The first is while the fœtus is in the matrix, and has reference only to the temporary teeth, which are in part ossified at birth. The second generation or period of ossification, is confined to those which are formed during lactation, and consists, according (as M. Delabarre says,) to the "father of medicine," of the incisores and cuspidati of replacement, and the first permanent molares. The third period embraces those which are formed from solid aliment, and consists of the second and third molares. The physical condition of the teeth will enable us to determine with an accuracy that can be relied on, the state of the constitutional health at the time they were respectively being formed.

Although, as has often been remarked by writers on odontology, the teeth of the child, like other parts of the body are apt to resemble those of its parents, so that when those of the father or mother are bad or irregularly arranged, a similar imperfection will generally be found to exist in those of the offspring, it does not necessarily follow, and when it does, it is the result of the transmission of some constitutional impairment, whereby the formative process of these small bones is either disturbed or prevented from being effected in a perfect and healthy manner. The teeth of the child, therefore, as an eminent French writer,* correctly observes, may be said to depend upon the health of the mother, and the aliment from which it derives its subsistence. If the mother be healthy, and the nourishment that is given the child be of a good quality, the teeth will be dense and compact in their texture, generally well formed and well arranged, and as a consequence less liable to be acted on by morbid impressions, than those of children deriving their being from unhealthy mothers, or that subsist upon aliment of a bad quality. Temperament, also, as will hereafter be made to appear, exercises no mean influence upon the functional operations of the body. Upon it, the constitutional health depends to a greater extent than pathologists generally admit, and hence it is, that that of the child usually partakes of that of one or other, or both of its parents. "This," says M. Delabarre, "is particularly observable in subjects that have been suckled by a mother or nurse whose temperament was similar to theirs." To obviate the entailment of this evil, he recommends mothers having teeth constitutionally bad to abstain from suckling, and that this highly important office be entrusted to a nurse having good teeth,—asserting at the same time, that, by this means, the transmission of so troublesome a heritage as a bad denture, may be avoided.

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* Delabarre.

Depending, then, as, not only the physical condition of the teeth, but that also, of the organization generally, confessedly does, upon the quality of the nourishment from which subsistence is derived during infancy and childhood, it is highly essential that this be good, and that that, especially, derived from the breast, be from those only who are in the enjoyment of health, and possess good constitutions. Whenever, therefore, the employment of a wet nurse becomes necessary, the greatest care should be taken to secure one possessing these highly important and desirable pre-requisites; and this cannot always be done without a knowledge of the signs that are indicative of the state of the constitutional health and temperament; and, as M. Delabarre judiciously remarks, there are cases where the physician cannot be too well assured whether the present good health be innate, or whether it is acquired,—stating at the same time, as an example, that "when a strange nurse is about to be employed, he cannot be too scrupulous." He also tells us that the inspection of the breast only enables us to judge of the development of the gland, and the quality of the milk as it then is, which may be good to-day, and in a short time become bad.

The truth of this observation has been verified in but too many instances, and it therefore becomes a matter of much consequence to find some signs upon which a greater reliance can be placed, than those which are to be found in the appearance of the breast, the cheek, or the beating of the pulse. These are often deceptive.

The following are the signs enumerated by professor Baumes, as essential for a nurse to possess. "An excellent nurse," says he, "should be of good morals; and, indeed, of fine physical qualities. Her age ought to be between twenty and thirty, and the colour of her skin natural. Her eyes should be lively and animated; her hair and her eyebrows brown or light coloured, her lips red, her teeth sound and good, her gums hard, and well coloured. She should have sweet breath; the nose unobstructed, and exhaling no odour—the neck sufficiently long, the chest large and well arched; her breasts ought to be loose, firm, and distended; elastic, and moderately large; with the nipples sufficiently irritable to be firm when the finger is passed under them; brown, long, and thin;—placed upon the middle of the declining part of the breast, in the middle of an elevated areola of an obscure, red colour."* Besides these, he describes the qualities that the milk should possess, and the tests necessary to their ascertainment.

These qualities are all essential, and though they at first be possessed, they do not furnish us positive assurance that there is no hereditary constitutional vice lurking in the system, that may not, by the debilitating process of lactation, become developed.

M. Delabarre, who seems to have devoted much time to the study of constitutional temperament, in remarking upon this subject, says, "Having been often consulted in the choice of a nurse, I have always paid much attention to the constitutional condition of the mouth, and whenever a child, born of weak parents, or of those having delicate teeth, has been confided to a good nurse, she has procured for it good teeth, and a good temperament, unless some severe disease has rendered useless this precaution."

Alluding to the fallibility of the signs usually relied upon as furnishing the requisite indications in this matter, the author, from whom I have just quoted, thus observes—"the semeiology of the mouth alone can make known to the physician whether that woman owes the beautiful carnation she possesses to her parents, or has attained it from a skilful regimen." "I have collected," says he, "some valuable facts on this subject, and I have met with some women, who, for a long time, have had a great interest in keeping out of view, that they had not always enjoyed as good health as they seemed to possess at the moment when they were soliciting employment. I would not have it thought that I suppose every woman having good teeth, is, indubitably a good nurse, for, even the most perfect constitution is susceptible of being deteriorated. We see, therefore, that to judge correctly of the past and present state of health, it is requisite to collect all the signs that can lead to this knowledge, and to obtain it, it is also requisite to be for a considerable time practised in these sorts of researches; for, as a beautiful carnation may mislead the judgment, so may handsome teeth be mistaken for good ones, which is not always the case. This remark is very important in practice, inasmuch as an infant suckled by a woman having bad teeth, very often has these organs similar to her's. These truths I could establish by a multitude of proofs, but they are so apparent, that it seems unnecessary to cite them."

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* Quoted from professor Thomas E. Bond's Translation.

Before I dismiss this part of my subject, I will quote from Professor Baumes, an anecdote, which he relates, conveying a no less severe than just reproof to mothers, who, regardless of the well-being of their offspring, commit those offices that nature designed them to perform, to mercenary nurses. "They who do so," he says, "merit the humiliation endured by the mother of the natural brother of Gracchus. This young Roman when he returned from a military expedition, brought to his nurse more magnificent presents than he did to her who had given him birth. My mother! he says, you carried me nine months in your bosom, but as soon as you saw me you abandoned me. My nurse received me gladly; she carried me in her arms, and nourished me with her milk for three years;—all she did was voluntarily done. You carried me in your bosom and nourished me with your blood from natural necessity. I feel more indebted to my nurse than to you, and I wished to show this by the difference of my presents."*

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* Vide, translation by Professor Bond.

There exists some diversity of opinion in regard to the influence that the quality of the nourishment from which subsistence is derived during infancy and childhood, exerts upon the future health and constitutional temperament. We are told by M. Delabarre, that a child, though it derives its being from weakly parents, may, by proper regimen, acquire a good constitution and temperament, and the truth of this observation has been verified in many instances. Were it necessary, I could adduce several that have fallen under my own immediate notice. M. Mahon, a French dentist, and author of considerable acumen and celebrity, gives it as his opinion, that a person cannot be born with a good constitution, except those from whom he derives his being, be in good health, and of that age when life is vigorous. He at the same time admits, that a child coming from parents of the most perfect health, may have its constitution deteriorated by an impure lactation; and that a child coming from weakly parents, may acquire a good constitution, though it will always bear about it certain signs of that which it had inherited,—and thence, he deduces, that it is possible to discover, by an examination of the teeth, any tendencies that may be lurking in the system. He has certainly studied the subject very attentively, and his remarks are worthy of consideration. If all which he says be not true, many of his observations, I think, are susceptible of proof.

In treating upon the physiognomical indications of the teeth, he says, "Does the child derive its life from parents that are unhealthy? The enamel of its milk teeth will be bad; the teeth themselves, will be surcharged with a bluish vapour, and in a short time, will be corrupted by a humid and putrifying caries. When the parents are only weakly or delicate, the enamel of the primary teeth will have a bluish appearance, there will be a tendency in them to a dry caries, which does not ordinarily make much progress, and seldom causes pain."

Again he observes, "It was only by a determination to notice very accurately the differences which I remarked on the teeth of numerous individuals, that I obtained these first truths. In the first instance, they were little more than mere conjectures, but by being daily increased, have now become diagnostics, about the certainty of which, I flatter myself, I cannot be deceived. It affords me pleasure to give an account in this place of a part of the means which I employed to arrive at the point which was the object of my researches. When I perceived some signs, as for example, shadowy lines on the primary teeth, and those of replacement of different children, I put all my application to work for the ascertainment of their cause, and when I believed I had found it, I interrogated their mothers, who generally confirmed the judgment I had formed. I then went on further; after calculations that seemed to me highly probable, I ventured to declare the period at which a great crisis or pain had happened, and in such a month of pregnancy; and I have had the satisfaction to find, that I had conjectured correctly. My expectations, based on the same procedure have been crowned with success in *adults*, whose teeth, by the simple examination of them, have disclosed to me an advantage no less valuable than the first, namely, that of generally being able to tell, whether they were born of strong, weak, or aged parents, and also, if the mother has had several children, whether they were among the last," &c.

That a person experienced in these researches, may, by an examination of the deciduous teeth, tell, whether the mother, during the latter periods of pregnancy, had enjoyed good or bad health, there is no question. But it is very doubtful whether much can be ascertained, by an inspection of the milk teeth, concerning the health of the mother previously to the time of the commencement of their ossification, for upon the manner in which this is effected, depends their appearance and physical condition. The density of a tooth may be told at a single glance by a practised observer, and it is this and its colour, that are principally influenced by the condition of the system during ossification. The shape of the teeth is determined by that of the jaws and pulps before the commencement of ossification. I am of opinion, therefore, that nothing positive, concerning the health of the mother during the first five or six months of pregnancy can be learned from an inspection of the teeth of either dentition. From an inspection of those of the second, no information whatever in relation to it can be derived, and if Mahon was fortunate enough in some instances to tell what it had been, at an earlier period than that which I have mentioned, his prognosis was founded upon nothing more than mere conjecture.

The teeth while in a pulpy or ganglionic state, partake of the health of the organization generally. As that is healthy and strong, or unhealthy and weak, so will the elementary principles of which they are then composed, be deteriorated or of a good quality, but after ossification has commenced, the parts ossified cease to be influenced by or obey the laws of the other parts of the body. If the general health be good at the time this process is going on, it will be evidenced in their density and colour; if bad, in the looseness of their texture, &c.

This is a subject to which I have paid considerable attention. I have for a long time been in the habit of carefully noting the differences in the appearance of the teeth of different individuals, and of both dentitions, and though I have been able to conjecture in some instances what had been the state of the mother's health during the first months of pregnancy, candour compels me to confess that, I have never been able to find any signs in the peculiarity of their shape, size, density, or arrangement, that indicated it. But from the moment that that part of the formative process of these organs commences, which is not influenced by subsequent changes in the general economy, certain peculiarities of appearance are impressed upon them that continue through life, and about the certainty of the indications of which, in regard to the general health, I think there can be no question.

In commenting upon the views which M. Mahon advances upon this subject, Delabarre says,* "if he had thrown the light of repeated dissections upon them, he would have acknowledged with Hunter, Blake, Mauro, Fox and Bunon, that the secondary teeth do not begin to ossify until about the sixteenth month after birth, so that the good or bad health of the parents at the time of conception, cannot in any way affect the teeth of replacement, which are not formed until after the child comes into the world."

But however vague and erroneous may be some of the opinions of Mahon, he has certainly advanced many that are correct, and from which hints have been derived that have formed the foundation of some very valuable contributions to the science of the semeiology of the teeth.

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* Vide, *Seméitique Buccale*, p. 225.

Lavater was laughed at and ridiculed for his enthusiastic belief in physiognomy, but the descriptions which he gives, with a view to the illustration of his favourite science, of the physical conformation of the various parts of the face, head, and other portions of the organism of man, embrace signs, which if applied to the study of semeiology, could hardly fail to lead to important results. Had the education and pursuits of this good and extraordinary man, fitted him for the investigation of this department of medical science, and had he entered into it with the same persevering ardour and zeal that he did that of physiognomy, he would have erected for himself an equally enduring monument of fame, and would thus perhaps have contributed as much to the amelioration of the condition of his fellows, as he has done by his physiognomical researches. In fact, of the importance of this subject, he seems to have been fully aware; and, after acknowledging his ignorance, he says the physiognomical and pathognomical semeiotica of health and disease ought to be treated on by an experienced physician, stating at the same time that, from the few observations which he had made, it was not difficult to discover the diseases to which an individual in health is most liable. He regards physiognomical semeiotics, founded upon the nature and form of the body, as of great importance to the medical practitioner, that he might be enabled to say to an individual in health, you may expect this or that disease sometime in your life. Possessed of this knowledge, he would be able to prescribe the necessary preventives or precautions against such maladies as he was most liable to contract.

Among the signs which Lavater notes as indicative of the temperament, he enumerates the shape, size, and arrangement of the teeth, but from the physical characteristics of these organs, when considered separately from other parts of the mouth, we only learn what the innate constitution was; they cannot be relied upon as indices to the state of the health subsequently to the time of their ossification. Their own liability to disease, however, may be determined by their appearance, and with the signs, therefore, that are indicative of this, every dentist should be familiar, to enable him, when consulted in regard to the attention necessary to the preservation of these invaluable organs, to prescribe such precautionary measures as shall secure them against the attacks of disease.

With regard, also, to the information to be derived from an inspection of the teeth, concerning the innate constitution, it has been well remarked by Delabarre, that physicians may derive much advantage in pointing out the rules of domestic hygiene for the physical education of children; for, says this eminent dentist, "can he admit of but one mode? Has he not, then, the greatest interest, to be well assured of the innate constitution of each, for whom his advice is required, to enable him to recommend nutriment suited to the strength of its organs? Will he report only on a superficial examination of the face, its paleness, the colour of the skin, all of which are variable? Will he not regard the repletion, or leanness of the subject, the state of the pulse, &c.? Surely he will make good inductions from all these things; but, the minute examination of the mouth, will give him, beyond doubt, the means of confirming his judgment; for, besides what we already know of the teeth, the mucous membrane of this cavity, receives its colour from the blood, and varies according to the state of that fluid." This latter is a fact, that the observation of the dental surgeon has an opportunity of confirming, almost every day; and which, when taken in connection with the physical characteristics of the teeth, together with those of the salivary and mucous secretions of the mouth, constitute data, from which, both the innate and present state of the constitutional health, may be determined with accuracy and certainty.

The symptoms of actual disease, have been minutely and repeatedly described, but the physiognomical signs by which the susceptibility of the human organization to morbid influences is determined, and the kind of malady most liable to result therefrom, do not appear to be so well understood. "Whatever," says the author last quoted from, "may be the knowledge which a practitioner may acquire of the changes that a disease, or even a tendency to a disease, may effect in the use of the functions of some organs, it is, at least, advantageous to be able to conjecture what has happened, in the whole of the system at another time. In fact, can a physician, when about to prescribe for a slight indisposition of a person whom he hardly knows, rely entirely upon the sabulous state of the tongue? Does not its aspect singularly vary? Is it not notorious, that in certain persons it is always red, white, yellow, or blackish? I, as well as others, have had occasion to make these observations on persons with whom it was always thus, but without their being subject to any of those indispositions that are so common in the course of life." These signs are as variable in sickness as they are in health, and consequently, can only be relied upon as confirmatory of the correctness of other indications that manifest themselves in other parts of the body.

The physical changes produced by, and characteristic of disease, have been described, both by ancient and modern medical writers, but the works that have appeared upon this subject, do not comprise all that is necessary to be understood. For example,—if we examine the lips, tongue, and gums of a dozen or more individuals who are regarded as in health, differences in their appearance and condition will be found to exist. The lips of some will be red, soft, and thin; others red, thick, and of a firm texture;—some will be thin and pale, others red on the inside, and pale on the edges;—some are constantly bathed with the fluids of the mouth, others are dry, and these differences of appearance and condition, are as marked on the tongue and gums as they are upon the lips, and are supposed to be attributable to the preponderance or want of existence in sufficient quantity of some one or more of the elementary principles of the organization. Hence, may be said to result the differences in temperament and susceptibility of the body to the action of morbid excitants.

A German writer* of considerable distinction tells us, and the same also is asserted by others, that the body is composed after an established manner, "of various congruous and incongruous ingredients," and "that there is," to use the metaphor, "a particular recipe, or form of mixture, in the great dispensatory of God, for each individual, by which his quantity of life, his kind of sensation, his capacity and activity, are determined; and that, consequently, each body has its individual temperament, or peculiar degree of irritability. That the humid and the dry, the hot and the cold," continues he, "are the four principal qualities of the corporal ingredients, is as undeniable as that earth and water, fire and air, are themselves the four principal ingredients." "Hence," he argues, "that there will be four principal temperaments; the choleric, originating from the hot; the phlegmatic, from the moist; the sanguine, from air, and the melancholic, from earth. That is to say that these are predominant in, or incorpoted with the blood, nerves, and juices, and indeed in the latter, in the most subtle, and almost spiritually active form. But it is equally indubitable to me, that these four temperaments are so intermingled that innumerable others must arise, and that it is frequently difficult to discover which preponderates; especially since, from the combination and interchangeable attraction of those ingredients, a new power may originate, or be put in motion, the character of which may be entirely distinct from that of the two or three intermingling ingredients." The truth of these propositions will hardly be questioned, and their admission at once affords a satisfactory explanation of the differences in the susceptibility of different organisms to the attacks of disease.

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* Vide Lavater's remarks concerning temperaments.

Assenting to these truths, and they are so self-evident that none can doubt them, I think it may be safely assumed that, as is the quality and respective proportions of the materials furnished for the growth, reparation and maintenance of the several organs of the body, so they will be. If, as I have before remarked, these be good, and in proper proportion, they will be endowed with health and vigour, and, as a consequence, qualified to execute their respective functions in a healthy manner. But if their elementary ingredients, to use an expression of the author from whom I have just quoted, be bad, their functions will be more or less feebly performed.

These materials are furnished by the blood.* From this fluid, each organ receives such as are necessary to its own particular organization. The blood, therefore, exercises a most important influence upon the whole of the mechanism of the body,—determining, as it most undoubtedly does, the state of the health of all its parts, which, as M. Delabarre observes, is relative to its quality, and "that the general health results from that of all the system." In order to this, harmony must exist between all the organs, but in consequence of the great variety and intermingling of temperaments, it rarely does, except, perhaps, in those people in whom the sanguine greatly predominates, and who have not become enervated by irregular and luxurious modes of living. And, even when it does exist, we are by no means certain that it will continue to do so; for exposed as the body is to a thousand causes of disease, its functional operations may at almost any moment become disturbed. Among the civilized nations of the earth, the peasantry of Great Britain probably possess as good constitutional temperaments as are any where to be found; and, yet, even with these people, we are told that, although the sanguinous greatly predominates in a large majority of the subjects, it is combined and intermingled, in a greater or less degree, with others.

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* Of the various writers who have treated upon this fluid, Magendie ranks deservedly high. To his persevering and laborious researches we are indebted for much valuable information. Not satisfied with mere conjecture, he instituted a great variety of experiments upon animals, which go very conclusively to prove that, no one of its constituents can be dispensed with without manifest and serious injury to the whole organism,—and that, it is dependent for its living principles upon the motion that is given to it in the circulatory system.

In all of these modifications the blood plays an important part; it determines the temperament of the individual, and as a consequence, the physical condition of all of the tissues of the body that are subject to the general laws of the economy. But the dependency of the solids upon this fluid is only mutual; it also is dependent upon them, and the condition of the one is relative to that of the other. The solids, if I may be allowed to use the metaphor, are the distillery of the fluids, while they in their turn nourish, repair, and maintain the solids. A change then in the condition of one, is followed by a corresponding change in the condition of the other. If the blood that is produced, be of an impure quality, or any of the substances that enters into its composition exist in too great or too small quantity, it will fail to supply the solids with the materials necessary to the healthful performance of their functions, and, if not actual disease, a tendency to it will be the result. And again, the purity of the blood is dependent upon the manner in which the solids perform their offices. While, therefore, duly appreciating the importance of this fluid, and its existence in a pure state, to the general health of the economy, I cannot ascribe to it, regardless of the functions of the solids, a controlling influence over the organization.

To distinguish all the nice and varied shadings of temperament, or states of the constitutional health, by the physiognomical appearances of the body, is perhaps impossible, or can only be done with great difficulty, and by those who have been long exercised in their observance, but to discover that which predominates is not so hard a matter, and its indications are no where more palpably manifested than in the mouth. By an inspection of the several parts of this cavity, together with its fluids and the earthy matter found upon the teeth, I repeat, inductions may be made, not only with regard to the innate, but also, the present state of the constitutional health, serviceable, both to the dental and medical practitioner; and, in the further prosecution of this inquiry, I shall endeavour to point out some of the principal of the indications that are here met with,—the appearances by which they are distinguished, and to offer such other general reflections as the subject may from time to time seem to suggest.

OF THE PHYSICAL CHARACTERISTICS OF THE TEETH.

Dental practitioners, or, at any rate, the more observing of them, have noted the marked differences that exist in the appearance of the teeth, the gums, lips, tongue and secretions of the mouth, of different individuals. They have also noted those of that earthy substance, (commonly called tartar) which is deposited in greater or less abundance on the teeth of every person, and though all may not have sought their etiology, many have had occasion to notice, at least, their local indications, and to profit from the information which they have thus been enabled to derive. They have not failed to observe that the volume, colour, length, and arrangement of the teeth vary, and that these are indicative of the susceptibility of the organs to disease.

But to proceed,—teeth in which the earthy salts or phosphate of lime exists in great abundance, are generally of a dull, or heavy white, of a medium size, short, with thick cutting edges, those of each class of uniform dimensions, very hard, and after the middle period of life, gradually assume a faint yellowish appearance. This description of teeth is most frequently met with in persons of a sanguinous temperament, or at least, those in whom this greatly predominates; they rarely decay, and are indicative, if not of *perfect* health, of a state bordering very closely on it at the time they were being ossified in the subjects in which they are found. They are occasionally possessed by persons of all nations and classes, but far more generally, by labouring people in healthy northern latitudes. Among the inhabitants of England, Ireland, and Scotland, and more especially the middle and poorer classes, they are very common. They are also very frequently met with in the northern parts of the United States, the Canadas, the mountainous districts of Mexico, and so far as I have had an opportunity of informing myself in France, Russia, Prussia, and Switzerland. Those who have them, generally enjoy excellent health, and are seldom troubled with dyspepsia or any of its concomitants. It is this kind of teeth, which Lavater says he has never met with, except in "good, acute, candid, honest men," and of whose possessors, it has been remarked, that, their stomachs are always willing to digest whatever their teeth are ready to masticate.

But, as it regards character or disposition of mind, it is, perhaps, more than questionable, whether any thing can be learned from the physiognomical appearances of the teeth, further than they may be influenced at the time of their ossification by the constitutional temperament or state of the general health, and though this may then be favourable to the production of such as possess the characteristics I have described, it may afterwards become so impaired as to retain but little of its original condition, while these organs by reason of their exemption from the laws that govern the functional operations of other parts of the body, preserve theirs. Those who possess the temperament, however, necessary to the production of such teeth, usually have all their organs well developed, and as a very common consequence, have open, frank and cheerful dispositions. It is probable, therefore, that, from having very frequently observed them in the possession of those who enjoy these happy qualities of mind, that this celebrated physiognomist was induced to regard them as an invariable accompaniment.

In confirmation of what I have before said in regard to the influence which the state of the general constitutional health at the time of the ossification of the teeth, exerts upon their susceptibility to morbid impressions, it is only necessary to mention the fact, well known and frequently alluded to, of the early decay of a single class, or a pair of a single class of teeth, in each jaw, while the rest, possessing the characteristics which I have just described, remain sound through life. Thus, whenever it happens, that a child of an excellent constitution is affected with any severe disease, the teeth that are at the time undergoing the process of ossification, are found, on their eruption, to differ from those which received their earthy material at another time, when the operations of the organism are healthily performed. Instead of being of a dull or heavy white, and having a smooth uniform surface, they have a sort of chalky aspect, or are faintly tinged with blue, and have rougher and less uniform surfaces. Teeth of this description are very susceptible to the action of corrosive agents, and as a consequence, rarely last long.

But, not willing to rest the correctness of these views upon mere hypothesis or vague conjecture, I have, in a great number of instances, where I have met with teeth thus varying in their physical condition and appearance, taken pains to inquire of those who had had an opportunity of knowing the state of the general health of the subjects at the different periods of the ossification of these bones, and in every case, where I have been able to procure the desired information, it has tended to the confirmation of the opinion which I have here advanced. Nor have I neglected to improve the many opportunities that have presented, in the course of a somewhat extended professional career, for making these observations.

Although the operations of the economy are so secretly carried on, that it is impossible to comprehend their mechanism fully, it is well ascertained, that the phenomena that result therefrom are influenced and modified by the manner in which they are performed. If they be deranged, the blood, from which the calcareous materials that form the basis of all the osseous tissues are derived, is deteriorated, and furnishes these earthy salts in less abundance and of an inferior quality. Hence, teeth that ossify when the system is under the influence of disease, do not possess the characteristics necessary to enable them to resist the assaults of the corrosive agents, to which all teeth are more or less exposed, and that rarely affect those that receive their ossific matter from pure blood.

The calcareous ingredients of these organs are furnished by the red part of this fluid, and the gelatine that is in them is derived from the white or serous part;—"whence," as M. Delabarre, remarks, "it results that the solidity of these bones vary according as the one or the other of these principles predominates," and the relative proportions of these, as I have endeavoured to show, are regulated by the state of the blood at the time the teeth are undergoing ossification. In healthy subjects the blood is composed of about four parts of crassamentum, or clot, which is the red part, and one of serum, but the relative proportions of these are not always the same. Disease tends to diminish the red, and to increase the white or serous part of it. Sometimes the serum forms more than one-half of this fluid, and as this abounds at the time of the solidification of the teeth, they will be soft in their texture, and liable to decay.

The views of *Professor Hayden*, in regard to the solidification of the teeth, are, that the process is the result of the operations of the laws of vitality through certain affinities, that the gelatine that is in them is furnished by the serum of the blood, and the calcareous molecules from the red part of it,—the former serving as a bed for the latter.

The researches of Duhamel go to prove that bones acquire solidity no faster than the parts which are about to ossify become charged with red blood. The experiments of Haller, are also confirmatory of this opinion. And, M. Delabarre, in remarking upon the ossification of the teeth, says, "the superficial layer of the pulp reddens before it ossifies, whilst all below is entirely white; soon another layer reddens, is ossified and then whitens, and so on, successively."

There is one circumstance, however, that appears to have escaped the notice of osteologists, that might seem to militate against the doctrine that the calcareous ingredients of bony structures are exclusively derived from the red part of the blood; and that is, the increase of density which the teeth continue through life very gradually to acquire, notwithstanding the prevailing opinion, that the fluid they circulate subsequent to their ossification, is not so much as even tinged with red. But, that these organs are capable of being injected with red blood, has been satisfactorily shown. I have, in many instances, seen teeth that were tinged with red, but lest any one should be sceptical upon the subject, I will quote the following from an extract of a letter, addressed by Dr. H. H. Hayden, to Professor Dunglison, published in the "*Encyclopediæ of Medicine*," and copied into the "*American Journal of Dental Science.*"

"In certain varieties of asphyxia," says Dr. H. "the appearances of the teeth are not only singular, but highly instructive, in a physiological point of view, especially. They are almost uniformly tinged red. If examined immediately after death, they present a deep pink hue; if sometime after, the tint is darker. The different shades of colour, however, will generally depend in a great measure upon the age of the person, and the violence of the death." A little further on he remarks, that his "attention was attracted to these and to many other appearances of the teeth about the year 1815;" and that since that time, he has "observed them in numerous instances, both in human teeth, and in those of the bullock." Again, in another place he remarks, "In a letter received from my much respected friend and professional confrere, the late Edward Hudson, Esq.," dated Philadelphia, Sept. 11, 1818, he observes:—"In the small box you will find eight very fine teeth, if they were not red. I want your opinion of what occasions this redness, premising that the teeth of all drowned persons are so that I have examined."

Now, if teeth are capable, under any circumstances, of being injected with red blood, is it unfair to presume, that a portion of the crassamentum or red part of this fluid may become so diluted with the thinner or watery parts of it, as to be forced with them into the vessels of these organs by the impetus which is ordinarily given to it by the circulatory apparatus? I am of the opinion that it is not, and that it is in this way that the increase of density which these organs require is to be accounted for. A sufficient quantity of earthy salts, I should suppose, might be conveyed to them through the vessels with which they are penetrated, to effect the very trifling and almost imperceptible increase of density they attain to, subsequently to their ossification. The hypothesis, I am aware, does not accord with the views of Hunter in regard to the organization of the teeth, nor with those of several modern European writers on odontology, who maintain that these organs are not endowed with vascularity, but the incorrectness of this doctrine has been shown beyond the power of successful refutation. The circumstance to which I have just alluded, of the injection of the teeth with red blood, at once settles this question, and renders its further discussion on the present occasion unnecessary.

Having digressed thus far, I shall now proceed to notice a description of teeth quite different from those which I first described. The following are their characteristics:—They have a bleached, or azure blue appearance, they are most commonly long, the incisors thin and narrow, the cuspidati usually round and pointed, the bicuspides and molares small in circumference and deeply indented upon their grinding surfaces.

Teeth possessed of these characteristics are generally very sensitive, easy to be acted upon by corrosive agents, and to the ravages of which, unless great attention be paid to their cleanliness, they usually fall early victims. They have a soft chalky texture; the phosphate of lime and other earthy salts which they contain, are small in quantity, and as it seems, of a bad quality.* The kind of caries to which they are peculiarly subject, is soft, white and humid. The calcareous components of such parts of them as are affected with this disease is wholly decomposed, so that nothing remains but the gelatine, which may be removed layer by layer, whereas, as these organs approach in appearance and physical peculiarities those which were first noticed, caries in them, is drier, of a darker colour, and possessed of greater density.

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* The analysis of the teeth of different individuals exhibit very different results. The relative proportions of the constituents of which these organs are composed are regulated, as I have before stated, by the state of the health of the subject at the time of their formation. If this be good, their calcareous components will be abundant, and of excellent quality, and in proportion as it is otherwise, these will be small in quantity, and inferior in quality.

Thus, the colour, consistence, and humidity of dental caries, may be said, in most instances, to be determined by the density of the teeth, in which it occurs. The colour of it, however, may be, and doubtless is, in some cases, influenced by other circumstances; but as to what these are, I profess myself ignorant. They may consist in some peculiar modification of the agents—upon the chemical action of which on the organs, the disease is dependent; but this is mere conjecture, and the solution of the question still remains for future investigation. Whether it will ever be settled to the satisfaction of all, the future only can determine.

Having thus incidentally adverted to the decay of the teeth, I shall take occasion, while upon the subject, to notice an error that has obtained, to a considerable extent among European writers on dental science, in regard to the nature and cause of the malady. It consists in attributing to the teeth the same diseases that are incident to other bone, and was first promulgated by Mr. Fox. Subsequently, the doctrine has been adopted, with some unimportant modifications, by Bell, Jobson, and a few other English authors. It has also found favour to some extent, in the French school; but we are told by some of the continental writers, that dental caries, besides exhibiting phenomena, that are common to the disease in other bone, presents some that are peculiar to itself.

But, respecting the nature and cause of this disease, as occurring in the teeth, I have expressed my views somewhat at length in another place.* For the present, then, it will be sufficient to state, that, to the doctrine that it is analagous to caries in other bone, and is the result of inflammation of the bony structure of the organs, I wholly dissent, it being opposed both to facts and sound reason. If it were true that inflammation was necessary to the disease, it would never occur except in living teeth, and it is notorious that dead teeth, are as liable to its attacks as living ones. It exhibits, too, in these, all the phenomena that are manifested by it in the others. This is true, not only with regard to teeth that have lost their vascular connection with the general system, and are still retained in the mouth, but also with those that are placed there by art, if fabricated from bone or ivory. The vitality of the teeth may influence the progress character of the decay, though I am not certain that it does, but it is not, by any means, essential to it.

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* See my Practical Treatise on Dental Surgery, and vol. 1 of American Journal of Dental Science.

If the decay of the teeth then, is not referable to inflammation in their bony structure, to what is it to be ascribed? The inference is, that it is the result of the action of chemical agents, and when we take into consideration that the fluids of the mouth, when in a morbid condition, are capable of decomposing their enamels, if not possessed of more than ordinary density, and that the disease frequently commences upon this outer covering, the conclusion is at once irresistible. A most remarkable case of this description of caries, (called by Mr. Hunter, "*decay by denudation,*") is mentioned by Dr. Eleazar Parmly, in his notes to this gentleman's treatise on the teeth, published in the American Journal of Dental Science, in which the labial faces of several natural teeth, that had been artificially placed in the mouth, were attacked by it.

It may however, be asked, if caries of the teeth be produced by the action of external corrosive agents, how is it that the disease sometimes commences within the bony structure of the organs, and makes considerable progress there, before any indications of its existence are observed externally? I answer, that it never does commence within the bony structure of the organs; its attacks are always upon their external surfaces, sometimes upon the enamel, but most frequently upon the bone within the indentations on the grinding faces of the bicuspides and molares, and on the sides of the teeth at the points where they come in contact with each other, and where this outer covering is frequently so fractured by the pressure that is exerted upon it, that the juices of the mouth find ready access to the subjacent osseous tissue. The destruction of the organs may be gradually going on here for months and even years without any notable signs of its existence; and the commencement of the malady in these places have lead many to suppose that it had its origin within their osseous structure.

But a still more absurd and ridiculous theory in regard to the cause of the disease is advanced by Mr. Charles Bew. He attributes it to the arrest of the circulation in the organs, "by the lateral pressure of the teeth against each other."*

The exposure of the teeth too, to sudden changes of temperature, as from heat to cold, or cold to heat, have been regarded almost from time immemorial as a cause of their decay, but no explanation of the manner by which it produced the disease was attempted, until the promulgation of the doctrine that it was the result of inflammation, when it was numbered among, only the *exciting causes.* The popular belief that cold is a cause of dental caries, is traced back to Hippocrates, who, in mentioning the parts of the body that are injuriously affected by it, includes the teeth.†

M. Delabarre in alluding to this affection observes: "Caries of the teeth is a disease of their tissue, and not a simple decomposition proper to inert bodies. As an ulcer in a soft part is easily healed in a healthy subject, so the cure of this malady is effected with ease in those of good constitutions. Caries, in individuals of different constitutions, cannot be of the same nature, because their teeth have not the same solidity. Thus, those that are largely charged with gelatine will be exposed to *odonto-malaxia*, whilst those in which the calcareous phosphate is present in large quantity, will not be attacked with it as long as they preserve this advantage. But absorption being effected in teeth as in other bones, (which their softening in the interior and below the enamel, demonstrates,) consequently it follows, unless some external agent may have had power to act on the osseous tissue, that we can estimate the qualities of the humours by the nature of the caries that is manifested in the teeth."

"The softening of the interior tissue can result only from a derangement of the central ganglion; and this is caused by the arrival at this body of arterial blood deprived of the properties requisite to maintain it in a healthy state.

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* See Bew on the teeth, pages 23, 64-5.

† Frigidum inimicum ossibus, dentibus, nervis, cerebro, spinali medullæ: calidum vero utile. *Aph. sec. v.*—par. 18.

The incorrectness of the opinion advanced by M. Delabarre, that caries of the teeth consists in something more than a mere decomposition of their tissue has been shown in the fact, that dead teeth decay as readily as living ones, and that caries in them exhibits the same appearances that it does in those that are possessed of vitality; and between the manner of the arrest of the progress of this malady, and that of an ulcer in soft parts, there is no more sameness than there is between the two diseases. The cure in the one case is effected by the restorative powers of the body, whereas, in the other, it is accomplished by the aid of art,—the operations of the economy not contributing in the least to the restoration of the injury.

The reason of the difference in the nature of caries of the teeth in individuals of different constitutions, is, as M. Delabarre has justly remarked, because of the difference in the density of the organs, which is determined by the temperament or state of the general health at the time of their formation. I am compelled to differ with him in the opinion that the softening of teeth that are not well provided with "calcareous phosphate," is owing to the removal of this earthy material by the absorbents, and that the disease is identical with that which in other bones, is denominated *mollities-ossium*. The action of the solvent agents that are concerned in bringing about that condition of the teeth designated caries, is facilitated by the softness of the organs, and hence, the rapidity of decay in those that are of a very loose and spongy texture, and the rare occurrence of the malady in those that are endowed with great solidity. The decomposition too, of their earthy salts is the more perfect, in proportion as they exist in small quantity. An impairment of the arterial blood, resulting from a "disturbance of the central ganglion," or any other cause, can have no agency in the decomposition or softening of the osseous structure of the teeth, except it gives rise to a morbid condition of the salivary and mucous fluids of the mouth. The destruction of the interior parietes of a tooth never takes place while the pulp or central ganglion remains; but this sometimes inflames and separates, and gives rise to the formation of an acrid and very corrosive humor; and, it is to the presence of this, that the softening of the bone surrounding the dental cavity, is attributable.

It remains to be proven that the absorbents have any agency in the destruction of the osseous tissue of these organs. That they do, not a shadow of evidence has been adduced, but that they do not, is rendered more than probable by the fact, that it takes place in those that are devoid of vitality, and if it can be effected without them in the one case, we have no right to suppose that it is not in the other.

I have said that no evidence has been adduced to show that the absorbents were capable of breaking down and carrying off the bony ingredients of the teeth, but I should have noticed the case mentioned by Mr. Thomas Bell,* of the occurrence of what he supposed to be an abscess in the substance of a tooth. From the drawing, however, which he has given of the tooth, it is seen that while the cavity extends to a considerable distance into its bone, the enamel constitutes its outer parietes,—a circumstance, that leads me to believe, that it was occasioned by the decomposition of this part of the osseous structure of the organ by some acrimonious humor that found access to it through an opening in the enamel. Indeed, cases are often met with of caries in teeth that are very soft, and not unlike the one described by Mr. Bell, where the destruction of both the calcareous and animal materials is so thorough that only a very small quantity of soft, moist, and white matter is found in the cavities occasioned by the disease. I cannot, therefore, under the circumstances, but believe, that Mr. B., though for the most part a close and accurate observer, and withal an accomplished writer, mistook this description of caries, for what he has termed an abscess.

Having departed thus far from my main subject, with a view of correcting what I conceived to be some palpable errors in dental pathology, I shall now resume its consideration. The great liability of the kind of teeth last described to decay, has already been noticed, and it may be proper to observe, that they are frequently atrophied, or have upon their surfaces white or brown opaque spots. These vary in size and number. Several are sometimes found upon a single tooth, and in some instances every tooth in the mouth will be more or less marked with them.

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* Vide Anat. Phys. and Diseases of the Teeth, page, 171.

It rarely happens, however, that more than two or four of a single denture are thus affected; and it is worthy of remark, that those most frequently marked by it, are the central incisors of the upper jaw, and the bicuspides of the lower. The incisors of the lower jaw are rarely marked with this most singular affection, yet, they are, by no means, exempt from its attacks. I have met with a number of cases where they were atrophied.*

This, however, is not the only kind of teeth that are marked with this affection. These spots are occasionally met with on teeth of every degree of density, shape, shade, and size; but they are, probably, more frequently seen on such as those last described, than any other, and besides, it often happens that they are affected with erosion on emerging from the gums, and sometimes so badly as to place both their restoration and preservation beyond the reach of art. This species of erosion, or that which takes place while the teeth are in their matrices, is caused by some morbid condition of the fluid within which they are there bathed, and is denominated congenital.

But to proceed—teeth like those under consideration, are indicative of a weakly, innate constitution,—of a temperament considerably removed from the sanguinous,—and of blood altogether too serous to furnish materials, such as are necessary for the building up of a strong and healthy organism. They are more common to females than males, though many of the latter have them. They are met with among people of all countries, but by far more frequently among those who reside in sickly, southern latitudes, and whose systems have become enervated by luxurious modes of living. Among the inhabitants of Great Britain, they are more rare than they are among the Americans, and those who have them seldom attain to a great age. Nevertheless, some, under the influence of a judicious regimen, and a salubrious climate, though innately delicate, as has been the case with most of those who have this kind of teeth, do acquire a good constitution, and live to a great age, while the dental apparatus, less fortunate, except the most rigid and constant attention be paid to the use of the means necessary for its preservation, generally soon falls an early victim to the ravages of disease.

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* These spots upon the enamel or surfaces of the teeth, are, doubtless, caused by the destruction of the bond of union between these apparently crystaline coverings and the subjacent bone, and that, too, during the solidification of the organs. M. Delabarre attributes them to the death of a greater or less number of the exhalents, with which he contends that the enamel is furnished. And, to erosion, an affection entirely different, M. Duval applies the name that this affection is designated by.

There is another description of teeth, though differing in many of their characteristics from those of which I have just been speaking, that are, nevertheless, not unlike them in their texture, and in their susceptibility to deleterious impressions. The crowns of these are much larger than those of teeth of the ordinary size; their faces are rough and irregular, with protuberances, rising, not only from the grinding faces of the bicuspides and molares; but also, not unfrequently from their sides, with correspondingly deep indentations. Their appearance is that of a muddy white. The crowns of the incisors of both jaws are broad, long and thick. The posterior or palatine surfaces of those of the superior maxillary are rough, and usually have a deep indentation in them. In the majority of cases, their arrangement is tolerably regular, though they are more or less inclined to project. Their alveolar ridges usually describe a broad circle, and evidence a development, which, though large, is, in many respects faulty. The excess in size, both here and in the teeth, seems to consist more of gelatine than calcareous phospate.

This description of teeth decay readily, and in some instances appear to set at defiance the resources of the dentist. They are liable to be attacked at almost every point, but more particularly in their indentations and on their sides which come in contact with each other.

I am acquainted with a family, consisting of seven or eight members, most of whom are adults, and all have this kind of teeth. The most thorough and constant attention has been paid by each, to the use of the most approved remedial means, and yet all have lost a greater or less number of their teeth. They are generally first attacked on their lateral surfaces and in their indentations, but neither their labial faces nor most prominent points are exempt from the disease. No sooner than its progress is arrested in one place or part, than it appears in another. I have had occasion to fill a single tooth in as many as four, five, or six different places, and in this way, though my efforts at the preservation of a considerable number of them have proved abortive, I have been able to save some for a few years. But it is not necessary to particularize cases. Every practitioner has seen teeth like those of which I am now speaking, and is aware of the difficulty of their preservation.

It may be remarked, however, that the corrosive properties of the fluids of the mouth are sometimes so lessened by an amelioration of the constitution, that notwithstanding the great susceptibility of the teeth, of being acted upon by them, they may not for years, or until the general health relapses into its former, or some other unfavourable state, exert any very active or decidedly bad effects upon them. This has happened in several instances that have come under the author's own immediate observation, and it should be borne in mind, that the solvent qualities of these juices are influenced by the state of the constitutional health. So far as that can effect these fluids, and no farther, it may exert a beneficial or prejudicial action upon the teeth.

Persons who have teeth like those now under consideration, generally have what Laforgue calls, lymphatico-serous temperaments. Their blood is usually pale, and the fluids of the mouth, while they are poured out in great abundance, are for the most part exceedingly viscid. They do not have that white frothy appearance that is observable in those of healthy sanguinous individuals.

Laforgue enumerates among the Europeans, three classes, each differing from the others in the quality of the materials that compose their respective organisms, that can be distinguished by their teeth.* The first of these classes have pure blood, a good constitution, and as a consequence, their osseous tissues are compact, their flesh firm, and all of their fluids of a healthy and good quality. The second class have sanguino-seróus temperaments, and the third lymphatico-serous.

The first of these classes, he tells us, have handsome teeth, well enamelled and of a cream colour. The molares of the first dentition, of the second class, and sometimes the secondary incisors and cuspidati, are eroded, and the third class, he says, have teeth that are very white, brittle, and that are easily affected with caries.

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* Vide *Séméiologie Buccale et Buccamancie,* pp. 3, 4, 5.

The kind of teeth which he assigns to the third class, though frequently possessed by those who belong to it, are oftener met with among those of the second. It is among those of this class that the teeth which I last described are most frequently found.

Continuing the subject, he says, "there are in each constitution two degrees that are distinguished by the quality of the materials that compose the teeth. The second degree of the first class, has not so much of the bony structure, and their enamels are thinner than in the first degree; neither are the flesh, the blood, or any of the fluids of so good a quality. Persons of the second class are not so healthy as those of the first. There is nothing to distinguish them, except that the one constitution is more perfect than the other.

"In the second constitution erosion is more strongly marked in the first than in the second degree, and it has its seat upon the incisors instead of the large molares of the first dentition. In the third constitution, the second degree is marked by the softness of the teeth, which are more subject to caries than the first degree. The quality of the blood, the flesh, fluids, and the health and strength of subjects of the second and third constitutions are always in proportion to the density of the osseous system."

The present state of the constitutional health is not, as M. Laforgue supposes, indicated by the appearances of the teeth. The health of the general system is liable to impairment from a thousand causes, and though it be such, as may be necessary to "*handsome*, *well enamelled*, and *cream coloured teeth*," at the time of their formation, it may afterwards become bad while these organs will retain their primitive characteristics. If the character of the original constitution is maintained, its condition may be ascertained by the appearances of the teeth. It is probable, therefore, that Laforgue had reference to those cases only where it had not undergone any change, and if so, his views are unquestionably correct.

The classes of constitutions which he particularizes as distinguishable among the Europeans, by the appearances of the teeth are all met with in America, together with an almost countless number of intermediary ones. They cannot, however, be so readily determined from an examination of the dental organism, for the reason, that both present a much greater variety, and that though the first be primitively good, it is more subject here than there to impairment—a change, as has been before intimated, in which the latter does not participate. The reason of this, I am inclined to believe, is owing more to the difference in the habits and modes of living of the inhabitants of the two countries than that of any difference in the salubrity of the climates.

As teeth that are neither too large nor too small, and that have a close compact structure, and slightly tinged with yellow, are indicative of a constitution, whatever it may be at the present time, that was innately good, so those that are long, narrow, and faintly tinged with blue, as well as those that greatly exceed the ordinary size of these organs, and that are irregular in shape, and that have a rough and muddy appearance, furnish assurance of a constitution, that was at least, originally bad. The first of the latter descriptions of teeth are more frequently met with among females than males, and among those of strumous temperaments, than those in whom this diathesis does not exist. There is another kind of teeth that resemble these in shape and size, and also, in texture, that have been more universally regarded as denoting a tendency to phthisis pulmonalis, than any other description that have attracted the attention of writers on this disease. They are characterized by whiteness, and a pearly gloss of the enamel, and are thought by many to be exceedingly durable, but I have observed that individuals who have this sort of teeth, when attacked by febrile or any other form of malady that had a tendency to alter the fluids of the body, were very subject to tooth ache and dental caries, and that when this condition of the general system was continued for a considerable length of time, that their teeth, in rapid succession, crumbled to pieces.

It would seem, from this circumstance, that the fluids of the mouth, in subjects of strumous temperaments, if free from other maladies, or tendencies to them, are less prejudicial to the teeth than those of persons of most other constitutions, and I am of the opinion that it is owing to this that they are so seldom attacked with caries. M. Delabarre, in connection with a passage from which I have before quoted, in relation to the softening of the interior of the teeth, takes occasion to allude to the effects produced upon these organs, in those who accidentally become consumptive. He is of the opinion that caries supervenes to the disease, and is a consequence of the general debility that is engendered by it. He says, however, that "the patient generally dies before the central ganglion arrives at that state in which its properties are changed."*

Now, this is directly opposed to all observation on the subject, for it is well known that teeth are less affected by this disease than almost any other, and it is unfortunate for the doctrine which he has espoused (that the bony tissue of these organs are softened by the ceasing of the arteries to supply it with calcareous materials) that he should have resorted to this argument. Its absurdity is rendered apparent by his own showing, and that, too, in the paragraph succeeding to the one in which it is used. He says, "whatever may be the diseased condition of the teeth, they may be examined as unexceptionable evidence, that will inform us whether the patient owes his present state of health to a predisposition, or whether having supervened during the course of his life, it depends on an accidental cause."

If the state of the health, subsequent to the ossification of the teeth, were capable of diminishing or increasing the density of these organs, we could learn nothing from an inspection of them concerning the primordial constitution. Nor would we, therefore, be able to determine whether the present state of health was the result of constitutional predisposition, or that of some other cause; for, if they were subject to changes, like other parts of the body, their physical condition might be different to-day from what it was yesterday, so that a diagnosis, founded upon the character of the teeth, would be nothing more than mere vague conjecture.

But, although Delabarre is, in many things, somewhat inconsistent, very many of his views are correct, and few men have contributed more largely by observation and experience, to the advancement of the science of the teeth than he has done.

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* Vide, Traité, de la Seconde Dentition, page 265.

In speaking of persons who have that kind of teeth, which, though beautiful, from having smooth and apparently polished surfaces, present shades intermixed with a dirty white, he says, they "have had alternations of good and indifferent health during the formation of the enamel." "These teeth," he continues, "ordinarily have elongated crowns, and may present marks of congenital atrophy." Again he observes, "teeth of this sort deceive us by appearing more solid than they are; they remain sound until about the age of fourteen or eighteen; then, at this period, a certain number of them decay, especially when in infancy, the subject was lymphatic, and continues to be so in adolescence. This description of teeth is frequently met with among the rich classes, where children born feeble, reach puberty only by means of great care, and, consequently, owe their existence only to the unremitting attention of their parents, and the strengthening regimen that the physician has caused them constantly to pursue. Having reached the eighteenth or twentieth year, their health is confirmed, but the mucous membranes ever after have a tendency to be affected; the redder colour of the mouth, more especially its interior, and that of the lips, and the upper part of the palate; which, by degrees, discovers itself as the subject gradually advances in existence, shows its ameliorated condition. It is thus, that numerous persons, having gained a sanguinous temperament, would deceive us, if it were not that some marks of erosion are seen on the masticating surfaces of the first permanent molares, which informs us that the present health is the result of amelioration."

There are other cases where the teeth are of so inferior a quality, that they no sooner emerge from the gums than they are seized upon and destroyed by caries, while the subjects who possessed them, as has been intimated in another place, were enabled, by skilful treatment, to overcome the morbid constitutional tendencies, against which, during the earlier years of their existence, they had to contend, and eventually, to acquire excellent health. But in forming a prognosis, it is essential to ascertain whether the general organical derangement that prevented the teeth from being well formed, and thus gave rise to their premature decay, is hereditary, or whether it has been produced by some accidental cause subsequent to birth. The procurement of health in the former case, will be less certain than in the latter, for, when the original elements of the organization are bad, the attainment of a good constitution is by far more difficult.

The denudation of the bony tissue of the teeth by the scaling of the enamel is an affection, which though rare, that is nevertheless occasionally met with. It is called by Duval the "*decorticating*,"* of the teeth, and this designation is by no means inappropriate, as it at once conveys a correct idea of the true character of the disease.

The kind of teeth that seem most liable to this affection are met with in persons of sanguino-mucous temperaments, and that have suffered in early childhood from general febrile or inflammatory disease. From this circumstance it is highly probable that the intermediary substance,† or that which connects the enamel with the bone is either partially destroyed or so impaired during the formation of the teeth, by the constitutional derangement, as to prevent it from constituting as perfect a bond of union between the two as may be necessary to their mutual support and protection. Admitting this hypothesis, the scaling of the enamel, when attacked externally with erosion, is easily accounted for. Its connection with the subjacent bone being weak or imperfect, the destruction of the integrity of its fibres cause it to flake off from the teeth. Thus, the malady may be regarded as the result of an imperfect union of the enamel with the bone, and the action of chemical agents upon its external surface.

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* See Dictionary of Medical Sciences, art. Dent.

† I speak of an intermediary substance, (one of the offices of which is supposed to be the connection of the enamel with the bony tissue of the tooth,) because its existence has been conclusively demonstrated. The discovery of this, if I mistake not, was first made by Dr. H. H. Hayden, and described in a letter addressed to Dr. Mitchell, and published in the *Medical Repository*, in 1813. He says, "I mentioned to you," (alluding to a conversation which he had previously had with Dr. M. on the subject,) "that I had noticed a substance entering into the composition of the human teeth, and those of animals, situated between the enamel and the bone: and apparently differing in substance from either; that in the case in which I first discovered it, (which was a very large human tooth, that had gone in the most rapid manner to decay;) the appearance of this substance was similar to that of the membrane which lines the shell of an egg." The manner by which he made the discovery of this substance, he describes in another part of the letter. The existence of this substance is also particularly mentioned by Berzelius, and Professor Retzius, but in such a way as leads me to conclude, that they were not aware that Dr. H. was the first who discovered it.

The teeth of persons who have suffered from small-pox, measles, or other severe forms of eruptive disease or malignant inflammatory fever, during the time of their enamelling, often present a very singular appearance, unlike those that arc affected with the ordinary kind of erosion, where the edges of the enamel around the part affected are rough and brittle, they are smooth, or comparatively so, while the injury is confined to only very small and regularly circumscribed spots which extend in a direct horizontal line across such of the teeth as have been attacked by it. These pits are sometimes so close to each other that half a dozen or more of them are united so as to form a sort of narrow and irregular groove. Two and sometimes more of these grooves or rows of pits extend across the same teeth, but this happens only in those cases, in which the subjects have either had relapses, or been affected, during the enamelling process, with more than one of the maladies that give rise to their formation.

There are many other characteristics which the teeth present in shape, size, density and colour, and from which, valuable inductions might be made, both with regard to the innate constitution and the means necessary to their own preservation; but as the limits I have prescribed to this inquiry will not admit of their consideration, I shall conclude this part of my subject, by observing, that the appearances of these organs, as I have before said, vary almost to infinity. Each is indicative of the state of the general health at the time of their formation,—of their own physical condition and susceptibility to injury.

OF THE PHYSICAL CHARACTERISTICS OF THE GUMS.

Little can be ascertained concerning the primordial constitution from an inspection of the gums. Subject to the laws of the general economy, their appearance varies with the state of the constitutional health and the condition and arrangement of the teeth. Although the immediate or proximate cause of disease in them may be regarded as local irritation,—produced by depositions of tartar upon the teeth, or decayed, dead, loose, or irregularly arranged teeth, or a vitiated state of the fluids of the mouth, resulting from general organical derangement, or any or all of the first mentioned causes, their susceptibility to deleterious impressions, is influenced to a very considerable extent, by the constitution; and, the state of this, determines too, the character of the effects that are produced upon them by local irritants. For example, the deposition of a small quantity of tartar upon the teeth, or a dead or a loose tooth, would not, in a healthy person, of a good constitution, give rise to any thing more than a slight redness or tumefaction of the margin of the gums in immediate contact with it, while in a scorbutic subject, it would cause it to assume a dark purple appearance for a considerable distance around, to become flabby, more turgid, and to separate and retire from the necks of the teeth, or to grow down upon their crowns, to ulcerate and bleed from the slightest injury and to exhale a fœtid odour. And, in proportion as this disposition of body exists, their liability to be thus affected is increased; and, it is only among constitutions of this kind, that that peculiar preternatural prurient growth in them, by which the whole of the crowns of the teeth sometimes become almost entirely imbedded in their substance, takes place.

But notwithstanding the dependency of the condition of the gums upon the state of the constitution, they are occasionally affected with sponginess and inflammation in subjects of the best temperaments and of uninterrupted good health. The wrong position of a tooth, by causing a continued tension of that part of the gum which invests its alveolus, sooner or later, gives rise to a sort of chronic inflammation in it, and the alveolo-dental periostea, and a gradual wasting of its substance, about the mal-placed organ. Tooth-ache too, from whatever cause it originates, often produces the same effects, and the formation of salivary calculus upon the teeth, however small the quantity, is likewise prejudicial to their health.

All of these may occur independently of the state of the general health. A bad arrangement of the best constituted teeth, and tooth-ache, may be produced by a multitude of accidental causes which have no connection with the operations of any of the other parts of the body.

Therefore, while the appearance and physical condition of this peculiar and highly vascular structure, are influenced, in no inconsiderable degree, by the habit of body, they are not diagnostics that always and with unerring certainty indicate the pathognomic state of the general system. It can, however, in by far the larger number of cases, where the gums are in an unhealthy condition, be readily ascertained, whether the disease is altogether the result of local irritation, or whether it has been favored by a constitutional tendency. A comparison of the different effects, that are produced upon them by the same causes, in different individuals, will enable a careful observer, in most instances, to decide without much difficulty.

In adverting to the influence of local causes in giving rise to disease in the gums, Mr. Thomas Bell,* says, "But, although it appears that local causes are most frequently the agents in producing diseased action in these parts," (the gums and alveolar processes,) "yet we find occasionally that similar affections are proved to arise from constitutional sources alone, by their attacking parts of the gum where no irritating local cause remains, or by their continuing unabated, after the removal of such teeth as might be supposed to have produced them."

The agency of an altered condition of the juices of the mouth in the production of disease in the gums is too much overlooked. The irritation produced by the salivary and mucous fluids of this cavity is often as great as that which arises from a decayed, dead or aching tooth, or a deposite of tartar upon the teeth, and I have not the least doubt that they are the exciting and immediate causes of many of the maladies that attack these parts, and which are supposed to result alone, from constitutional predisposition. The effects which they produce upon the teeth when in a morbid state has already been shown. It is well known too, that they readily oxidize silver, and sometimes tarnish eighteen and even twenty carat gold. That they are irritating, when in this condition, to the soft parts of the mouth, is rendered still more conclusive from the fact that when allowed to escape and come in contact with the cutis of the lips or chin, which is continuous with the mucous membrane of this, as well as that of all the other natural cavities of the body, they not only increase its sensibility, but also not unfrequently produce painful excoriations.

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* See Anat. Phys. and Diseases of the Teeth, page 207.

Although the inference drawn by Mr. Bell, is in accordance with the pathognomic doctrines of the present day; I do not think it warranted by the premise, for, as I have shown, there may be other agents in the mouth than the teeth, capable of producing irritation.

I, however, fully concur with him in the following opinion: "The occurrence," says he, "of malignant ulcers, apparently attacking first of all, the gums and alveolar processes, and spreading from thence to the body of the jaw-bone, the cheek, the antrum, the orbit, &c., is too frequent not to have attracted the attention of every surgeon who has seen much of disease. Whether the irritation produced by the teeth, or whether any other source of local irritation, be the exciting cause, it is to the constitution that we must look for that predisposition, without which these severe and often fatal affections could not occur; and although, in some cases, the removal of the local irritant, in the very early stage of the complaint, may probably arrest its progress for a time, there is seldom much advantage attending it after the neighbouring parts have once become the seat of such disease."

Disease in the gums or alveolar processes, or both, I am of opinion, would seldom occur, no matter what the constitutional predisposition be, were it not for local exciting agents of some kind or other; nor, would it, on the other hand, ever assume a malignant form or character, were it not for some general tendency to such malady. And, when once implicated in disease of a malignant kind, the parts, though the exciting cause be removed, are seldom, as Mr. Bell observes, able to recover their healthy tone.

Both medical and dental practitioners can testify to the truth of this, and to the latter, in the treatment of the more aggravated forms of spongy and inflamed gums, or as the affection is sometimes called, "conjoined suppuration," it has been but too frequently verified. Although the progress of the malady may, for a time, be arrested, it is almost certain, sooner or later, unless the most thorough preventive means be constantly employed, to return; and, in the preventing of which, the difficulty is always in proportion to the depraved condition of the general system.

Influenced then as the diseases of the gums are by the state of the constitutional health, it is necessary in the treatment of their diseases, to discriminate between those that have resulted from local irritation alone, and those, which, though this was their immediate and exciting cause, are nevertheless aggravated by some peculiar physical depravity.

It is a well-established axiom in pathology, that each disposition has its own peculiar tendencies, and that these tendencies are increased by an augmentation, from whatever cause produced, of the general irritability of the system. Thus, in a person of a mucous disposition, a derangement of the digestive organs aggravates the habit, and increases the tendencies superinduced by it, to certain forms of disease in particular organs, and in none more than the gums. For example—a local irritant that would cause in an individual of this disposition, and not affected with any appreciable general derangement, nothing more than a slight congestion in the margins and apices of the gums between the teeth, would occasion in another of the same disposition, if affected with dyspepsia, turgidity and sponginess of their substance for a considerable distance around.

Enfeeblement of the vital powers of the body, increases the susceptibility of the gums to the action of irritating agents. Hence, they are often affected with inflammation, sponginess and suppuration of their edges, in persons labouring under excessive grief, melancholy, or any other affection of the mind, tending to enervate the physical energies of the organization. Disease, therefore, in these organs, is always favoured by general debility, and the reason of its being more aggravated in some than others, is owing to the differences in the attention that is paid by different individuals to the cleanliness of the teeth, and the differences in the tendencies that exists in them to it. In dispositions unfavourable to diseased action in the mucous membranes, and where constant and regular attention to the cleanliness of the teeth is observed, the only notable effects resulting to the gums from debility, is a diminution of their colour.

A local disease, situated in a remote part, often has the effect of diminishing the tendency in the gums to be morbidly excited, but when from its violence or long continuance, the general health becomes implicated to a considerable extent, the susceptibility of these parts is augmented.

Although deriving the predisposition which they have to disease from a specific, morbid, constitutional tendency, they, nevertheless, when diseased, contribute in no small degree to derange the whole organism. An unhealthy action here vitiates the fluids of the mouth, and renders them unfit for the purposes for which they are designed,—hence, when these parts are restored to health, whether by the loss of the teeth, or the prescription of the dental surgeon, the improvement that immediately takes place in its condition.

But, not only is a healthy condition of the gums essential to the general health, but it is likewise essential to the healthy condition of the teeth and their retention in their sockets. From the intimate and direct relationship that subsists between them, disease cannot exist in one, without, in some degree, at least, affecting the others. Caries of the teeth, for example, gives rise to inflammation of the gums, and the alveolo-dental periostea. On the other hand, inflammation in these parts is always, sooner or later, followed by a gradual destruction of their own substance, and that of the alveolar processes, the loosening, and frequently the falling out of the teeth,—a morbid condition of the juices of the mouth, from which, decay of the teeth, when the organs are not sufficiently dense to enable them to resist their corrosive action, and an impairment of the vital powers of the body, is almost certain to result.

But, having offered these few general remarks, I shall proceed to notice some of the more striking of the characteristics of the gums, and their local and constitutional indications—premising that a minute description of their various pathological conditions, as influenced by the different states of the general system, and habits of body, constitutes no part of the design of this inquiry. A full and accurate description of their various phenomena, together with their numerous relationships, would fill a volume of itself. I must, therefore, leave the performance of that task to some other pen, or occasion.

In childhood, or during adolescence, when the formative powers of the body are all in active exercise, and the nervous susceptibilities of every part of the human frame highly acute, the sympathies between the gums and other parts of the organism, and particularly the stomach, are, perhaps, greater than at any other period of life. The general health, too, at this time, is more fluctuating, and with all the changes this undergoes, the gums vary. Moreover, there are operations which are carried on beneath and within their substance, which are almost constantly altering their appearances and physical characteristics,—and which, being additionally influenced by various states of health and dispositions of body, it may readily be conceived, that those which are met with in one case, might be looked for in vain in another.

Having arrived at that age when all the organs of the body are in the full vigour of maturity, and not under the debilitating influences to which they had been subject during the earlier periods of life, the gums participate in the happy change, and as a consequence, present less variety in their characteristics. The general irritability of the system is not now so great, the gums are less susceptible to the action of irritating agents, and as a consequence, less frequently affected with disease; but as age advances, and the vital energies begin to diminish, the latent tendencies of the body are awakened, and they are again easily excited to morbid action.

In subjects of the most perfect constitutions, and during adolescence, they present the following appearances. They have a violet colour, a firm consistence, rough surface, their margins form along the outer surfaces of the dental circle, beautiful and regular festoons, and their mucous membrane, as well as that which covers all the other parts of the mouth, have a fresh, lively, roseate appearance.

The time for the molting of a primary tooth is announced some weeks before it takes place by an increased redness and slight tumefaction of the edges and apices of the gums surrounding it. The dentition of a tooth, whether of the first or second set, is also preceded by similar phenomena in the gum through which it is forcing its way, and these will be the more marked as the condition of the system is unhealthy, or as the habit of body is bad.

If the health of the subject continues good, and the teeth be well arranged, and their crowns do not wear off, and the necessary attention to their cleanliness be strictly observed, the characteristics just enumerated will be preserved through life, except that there will be a slight diminution of colour in them, from after the age of puberty until that of the next climacteric period of life, when they will again assume a somewhat redder appearance. But if the health of the subject becomes impaired, or the teeth be not regularly arranged, or wear off, or be not kept free from all lodgments of extraneous matter, the edges of the gums, and particularly their apices between the teeth, will inflame, swell, and become more than ordinarily sensitive.

The gradual wasting or destruction of the margins of the gums around the necks of the teeth which sometimes takes place in persons of the best constitutions, and is supposed by some writers to be the result of a general atrophy, is ascribable, I have not the least doubt, to some one or other of these causes,—favoured, perhaps, by a diminution of vitality in the teeth, whereby they are rendered more obnoxious to the more sensitive and vascular parts within which their roots are situated. This explanation of the causes of the malady, (for it is evidently the result of diseased action in the gums,) is rendered more than probable, by the fact that, it never occurs with those, who, from early childhood, have been in the regular and constant habit of thoroughly cleansing their teeth from four to five times a day.

Mr. Bell, however, while he thinks it may occasionally be an "indication of a sort of premature old age," does not believe it can "always be thus accounted for, as it is sometimes seen in young persons," and "doubtless arises," he says, "from the same cause as those presently to be considered," (alluding to what he afterwards says upon the same subject,) "as originating a similar loss of substance in these parts, when attended with more or less of diseased action." I cannot, for reasons that have been already assigned, concur with him in opinion that it "occasionally takes place without any obvious local or constitutional morbid action."*

Although possessed, as those, in the larger number of cases are, whose gums are such as I have just described, with the best of constitutions; they may, by intemperance, debauchery, or long privation of the necessary comforts of life, or protracted febrile or other severe kinds of disease, have their assimilative and all their other organs, so enervated, as to render every part of the body highly susceptible to morbid impressions of every sort, but still, this general functional derangement, rarely predisposes the structure now under consideration, to any of the more malignant forms of maladies that are occasionally known to attack it in subjects possessed of less favourable innate constitutions. Its margins may inflame, become turgid, ulcerate, and recede from the necks of the teeth, and the whole of its substance be involved in disease, but it will seldom be attacked with scirrhus or fungus tumours, or bad conditioned ulcers, or affected with morbid preternatural prurient growths; and in the treatment of its maladies, we can always form a more favourable prognosis in persons of this description, than those coming into the world with some specific morbid constitutional tendency.

But, the occurrence of severe constitutional disease even in these subjects, is followed by an increased irritability of the gums, so that the slightest cause of local irritation, gives rise to an afflux of blood to, and stasis of this fluid in their capillaries.

The teeth of persons thus happily constituted, are endowed with characteristics, such as have been represented as belonging to those of the best quality. They are of a medium size, both in length and volume, of a dull or heavy white, compact in their structure, generally well arranged, and seldom affected with caries.

Pursuing the subject, another constitution is observed, in which the gums, though partaking somewhat of the characteristics of those just described, yet differ from them in some particulars. Their colour is of a deeper vermilion; their edges rather thicker, their structure less firm, and their surface is not so rough, but more humid. Their mucous membrane has a more lively and animated appearance. They are rather more sensitive and susceptible to the action of local irritants, and their tendencies are more increased by general organic derangement, than they are in gums possessed of the appearances first mentioned.

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* Vide Anat. Phys. and diseases of the teeth, p. 210.

Their diseases, though generally easily cured or arrested by proper remedial treatment, are nevertheless more obstinate, and when favoured by disease of the general system, assume a still more aggravated form. Their predisposition in fact, to disease, is so much increased by severe and long continued general morbid excitement, and especially during youth, and by febrile or inflammatory affections, or obstructions in the parenchymatous organs, that not only their margins, but their whole substance also, sometimes becomes involved in inflammation, and sponginess, followed by ulceration of their edges, and a recession of them from the necks of the teeth, which, in consequence, loosen, and often drop out. But gums of this kind, like those first described, seldom grow down upon the crowns of the teeth. Neither are they often attacked with scirrhus or fungus tumors, or any form of malady resulting in sanious or other malignant conditioned ulcers. With diseases of this kind, they are not perhaps ever affected, except in those cases where every part of the body has become exceedingly depraved; and this is an occurrence that happens much less frequently in habits originally good, than in those in whom a specific tendency to such unfavourable morbid constitutional diathesis was primitively implanted in the organization.

The teeth of those whose gums are possessed of this second description of characteristics, if well arranged, and kept constantly clean—and, if the secretions of the mouth be not vitiated by general disease, will, in most cases maintain their integrity through life.

It is only among sanguinous persons that this description of gums is met with, and the teeth of subjects of this kind are generally of an excellent quality, and though rather more liable to be attacked with caries than those first noticed, it is seldom that they are affected with it.

In sanguino-serous and strumous dispositions, the gums are paler than in either of the preceding, and though their margins are thin and well festooned, they exude, after the twenty-fifth or thirtieth year, a small quantity of muco-purulent matter, which on pressure, sometimes is seen to ooze from between them and the necks of the teeth. Their texture is usually firm, and they are not very liable to become spongy, and they often remain in this condition to a late period of life without undergoing any very perceptible change. Although their connection with the necks of the teeth and alveolar processes appears weak, they rarely separate from them.

In remarking upon these kinds of dispositions, M. Delabarre tells us, that if they "abuse their physical powers," by an injudicious regimen, or too much study, they become enervated and "are subject to chronic sanguinous obstructions of the capillaries of the lungs, and to profuse hemorrhages." Dyspepsia and diseases in which the primæ viæ generally, is more or less involved, and chronic hepatitis are not unfrequent among subjects of this kind, and are. indicated by increased irritability, and sometimes a pale yellowish appearance of the gums. In jaundice, the yellow serosity of the blood is very apparent in the capillaries of this structure.

These constitutions are more common to females than males, to the rich than the poor, and to those of sedentary habits than to those who use invigorating exercises. If at any time during life the health is ameliorated, the gums assume a fresher and redder appearance, and the exudation of muco-purulent matter from between their edges and the necks of the teeth ceases.

In mucous dispositions, the gums have a smooth, shining appearance, and are rather more highly coloured than those of the preceding. Their margins, also, are thicker, more flabby, and not so deeply festooned; they are more irritable, and, consequently, more susceptible to morbid impressions.

If to this disposition, there be combined a scorbutic or scrofulous tendency, the gums during early childhood, in subjects, which, from scanty and unwholesome diet, have become greatly debilitated, are liable, besides the ordinary forms of disease that attack them, to another,—characterized by their separation from, and exfoliation of the alveolar processes—accompanied by a constant discharge of sanies. This malady, however, though peculiar to childhood, and wholly confined to the indigent, is by no means common.*

These constitutions are rarely met with, except in low, damp, and sickly districts of country. Their mucous membranes are exceedingly irritable, and secrete a large quantity of fluid.

In alluding to this species of disposition. M. Delabarre says, "in children, the skin is ordinarily white and tender; nevertheless, it is sometimes brown and wrinkled. They are usually fragile and weak; their blood is pale, their nutrition is imperfectly effected. In females, the vertebrial column is disposed to curve about the age of puberty, because," says he, "at this period, the vital energies are principally directed towards the uterus, and in consequence, although so very necessary in the osseous system, there they appear to be weak.

"The number of observations that I have collected during my practice in the city, and in several public institutions, have confirmed me in the opinion, that it is in this constitution, especially (alluding to the mucous) that the children of whom I have just spoken, are met with. The *organic life* in them has so little energy, that the operation of a local cause on a certain point, with greater activity than it has before done, sensibly diminishes the assimilative force of almost all the others. It is also probable, that the development of ganglion obstructions during dentition, are, many times, owing to the diminution of the sensibility in the lymphatics.

"We may also remark," says he, "that, their skin being very susceptible, the sympathy established between it and the mucous membranes, renders individuals of this kind very liable to contract rheums, and gastric and intestinal affections; they are likewise subject to easy night sweats, and vomitings of a sero-mucous fluid,"† &c.

But, persons even thus unhappily constituted, do, sometimes, by a change of residence and judicious regimen, acquire tolerably good constitutions. Little advantage, however, is derived from these, unless they are had recourse to before the twenty-fifth or thirtieth year of age, though they may prove beneficial at a much later period.

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* See an article from the author on this malady, in the Maryland Medical and Surgical Journal, vol. 1, page 445.

† Vide, Traite de la seconde dentition, page 287–8.

The gums, in subjects in whom there exists a scorbutic tendency, have a reddish-brown colour; their margins are imperfectly festooned, and thick; their structure rather disposed to sponginess, and ever ready on the presence of the slightest cause of local irritation, to take on a morbid action. When thus excited, the blood accumulates in their vessels,—where, from its highly carbonized state, it gives to the gums a dark, purple, or brown appearance; they swell, and become spongy and flabby, and bleed from the slightest touch. And to these symptoms, supervene the exhalation of a fœtid odour, the destruction of the bond of union between them and the necks of the teeth, suppuration and recession of their margins from the same,—gradual wasting of the alveolar cavities, the loosening and not unfrequently the entire loss of several or the whole of the teeth. These are the most common results, but sometimes they take on other and more aggravated forms of diseased action. Preternatural prurient growths of their substance, fungus and scirrhus tumours, ichorous and other malignant conditioned ulcers are occasionally met with here, in persons in whom there exists a scorbutic taint.

The occurrence of aveolar abscess in dispositions of this kind is often followed by necrosis and exfoliation of portions of the maxillary bone, and the effects which result to the gums from it are always more pernicious than in habits less depraved.

The development of the morbid changes that take place in this structure, even in subjects of this kind, while their character is influenced, if not determined, by a specific constitutional tendency, are nevertheless referable to an immediate or proximate cause, and, were this the proper place, I could cite numerous cases tending directly to the establishment of this pathological position, but as this constitutes no part of the design of this inquiry, I shall content myself with what I have already said.

In scrofulous dispositions the gums have a pale bluish appearance, and when subjected to local irritation, they become flabby, exhale a nauseating odour, detach themselves from the necks of the teeth, and their apices grow down between the teeth. The blood circulates through them languidly, and debility seems to pervade their whole substance. They are exceedingly irritable, and not unfrequently take on a very aggravated form of disease, and, as it often happens, that to this, as well as the preceding habit, there are combined tendencies which favour the production of ill-conditioned tumours and ulcers, these are often here met with.

The indications furnished by the gums of a mercurial diathesis in the system, are morbid sensibility, increased vascular and glandular action, foulness, bleeding from the most trifling injuries, pale bluish appearance of their substance, turgescence of the points or apices between the teeth, and sloughing. The effects, however, resulting to these parts from the use of this medicine differ in different individuals according to the general constitutional susceptibility, the quantity taken into the system, and the length of time its use is continued. In persons of very irritable habits, a single dose will sometimes produce ptyalism, and so increase the susceptibility of the gums, that the secretions of the mouth, in their altered state, will at once rouse up a morbid action in them.

The influence of a mercurial diathesis upon these parts, is not unfrequently so great as to result in the loss of the whole of the teeth; but with these effects both the dental and medical practitioner are to familiar to require any further description from me.

Finally, I would observe, that the indications of the several characteristics to which I have now briefly alluded, may not be correct in every particular, and there are others which I have not mentioned; yet, that they will generally be found so, I am persuaded every one whose attention has been for any considerable length of time particularly directed to the subject, will agree. As a general rule, persons of a full habit, though possessed of mixed temperaments, and in the enjoyment of what is usually called good health, have gums that are well coloured, with rather thick margins, and that are very susceptible to local irritation, and with this description of individuals, inflammation, sponginess and suppuration of the gums are very common. To prevent this, constant attention to the cleanliness of the teeth is indispensable.

Professor Schill, says the "gum is pale in clorosis and anæmia;

of a purple red colour before an active hemorrhoidal discharge, and in cases of dysmenorrhœa; of a dark red colour, spongy, and bleeding readily in scurvy and diabetes mellitus, and after the use of mercury. Spongy growths indicate caries of the subjacent bone."*

Regular periodical bleedings of the gums in dysmenorrhœa, and particularly in scorbutic and mucous subjects, are not unfrequent, nor in any case where they are in a turgid and spongy condition. Dr. Hayden communicated a very interesting case of this kind to me about two years since, that had come under his own immediate observation.

Spongy growths of the gums in scorbutic and scrofulous persons, often result from irritation produced by decayed teeth, and are not, therefore, always to be regarded as an indication of caries of the subjacent bone.

In treating upon inflammation, sponginess and suppuration of the gums, Dr. Hayden mentions, "great exercise of mind, melancholy, bad diet, suppression of the hemorrhoids, the sudden closing up or healing of seatons, issues," &c. and the "repercussion of some prevailing cutaneous diseases," &c. as favouring the production of this disease.†

The same author also says, he has "observed that persons subject to gout or rheumatism, though corpulent, are seldom affected with this disease," (conjoined suppuration.) "On the contrary," he observes, "I have remarked that persons afflicted with suppuration of the gums, are seldom troubled with gout or rheumatism; if so, however, the paroxysms are slight and of short duration."

Mr. George Waite says, "a change of residence to a damp climate will often rouse up in the gums a great degree of vascularity. In the damp places of England and Ireland, the appearances which the gums present are of a turgid and vascular nature. In the damp countries of France these conditions of the gums run a much greater length from the circumstance of the difference in the constitutions of the two nations. In the damps of Germany and Switzerland, persons also lose their teeth early in life, the climate engenders malaria and low fevers, enfeebles the powers of digestion, and brings on rheumatic affections with languor and general constitutional debility."

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* Outlines of Pathological Semeiology, page 168 of the Select Medical Library edition.

† Vide Med. Recorder for 1822, vol. v, p. 24.

Of the correctness of Mr. Waite's observations there can be no question, and they go to establish what I have said in regard to the predisposing cause of disease in the gums,—namely, that the enervation of the vital powers of the body, from whatever cause produced, increases their susceptibility to morbid impressions.

OF THE CHARACTERISTICS OF SALIVARY CALCULUS.

The colour, consistence, and quantity of salivary calculus, or tartar, as it is most commonly called, varies in different temperaments, and upon all of which, the state of the general health exercises a considerable influence. They, therefore, furnish diagnostics, important both to the physician and dental surgeon. The indications of the characteristics of this substance are in many cases less equivocal than those of the appearances of any other part of the mouth; but, like those of the gums, should not, perhaps, be alone always relied upon. In the forming of a prognosis, we should not neglect to interrogate every part from which information can be derived concerning the pathognomic condition of the several organs of the body.

Salivary calculus is composed of earthy salts and animal matter. Phosphate of lime and fibrina, or cartilage, are its principal ingredients; a small quantity of animal fat however, enters into its composition. The relative proportions of its constituents vary according as it is hard or soft, or as the temperament of the individual from whose mouth it is taken, is favourable or unfavourable to health; and hence it is, as M. Delabarre remarks,* that the analysisis that have been made of it by different chemists differ. No two give the same results.

The black, dry tartar, says the author to whom I have just referred, which is deposited around the necks of the teeth of such only as are possessed of good constitutions, is never in large quantity, is dissolved in muriatic acid with difficulty, while the dry, yellow tartar found upon the teeth of bilious persons dissolves more readily in it; but the soft white tartar, found upon the teeth of individuals of mucous temperaments, he tells us, "is scarcely at all soluble in the acids," but, "is readily dissolved in the alkalies."

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* See chapter on Salivary Calculus in Traite de la Seconde Dentition.

In regard to the sources from whence this substance proceeds, there is considerable variety of opinion. English and American writers on the subject agree in ascribing its production to the saliva, but the French have supposed it to proceed from different sources. *Jourdain*, thinks it is secreted by glands, which he believes are scattered over the periostea of the teeth. *Gariot*, says, it comes from the gums. *Serres*, announces to the world that he has discovered upon the mucous membrane of the gums certain glands, whose particular function it is, to secrete this substance. In commenting upon the views of this last mentioned author, M. Delabarre, thus remarks: "The small glands, which he thus designates," (alluding to the appellation of dental which the author gives them,") "may perhaps belong to the mucous or salivary systems, for the saliva, as all physiologists know, is not alone furnished by the parotid glands, but by a great number of calculus kennels, that are very observable in ruminating animals, scattered over various parts of the mucous membrane of the mouth. I, therefore, am of opinion, that this is a gratuitous supposition on the part of this author, because children of a very early age are not affected with tartar, and it is on them that he believes he has discovered the glands, which produce it. Did these really exist, they would augment in size, instead of decreasing, as age advanced, and their functions becoming more and more established, they would attain to a very large size in old persons, and those most subject to tartar. Now, there is nothing to lead us to suppose their existence in these individuals. Therefore, to suppose that organs that have no functions may be very perceptible, which, when they have them, cannot be discovered, is contrary to sound philosophy; were we to do so in this case, the *dental glands* of the author, would be entirely different from all others, which are the more decided, the more they are in action. Inadmissible then, as this supposition is, I do not believe in the existence of these glands, which I have patiently searched for, but in vain."

My own views in relation to the supposed existence of the dental glands of M. Serres, are so fully expressed in the foregoing remarks of M. Delabarre, that I do not deem it necessary to say any thing more upon the subject, except to add, what has been suggested by others, that he has evidently mistaken the mucous follicles of the mucous membrane of the gums for glands.

But, M. Delabarre is not more fortunate in the theory which he advances, of the formation of salivary calculus. He ascribes the production of this substance to a diseased exhalation of the mucous membrane of the mouth. Alluding to what M. Dupuy, professor of the veterinary establishment at Alfont, says concerning the formation of tubercular matter, of a calcareous nature, in soft tissues, where, he supposes there is no other fluid but mucous, he tells us that it is "in the same manner that the exhalents of the gums furnish tartar," and that "they give out more or less of it according as the gums are in a healthy or inflamed state." When diseased, he says, "they are covered with a whitish layer, which is at first soft," but gradually collecting upon the teeth, it afterwards becomes hard; and according to this author, it is only when the gums are inflamed that it is produced.

It is in this way that he accounts for its accumulation on the teeth of one side of the mouth, while those of the other have none of it on them, though they are all bathed alike in the saliva. The concretions of these terreous salts in the salivary conduits, he accounts for, by supposing them to be furnished by the exhalents of the mucous membrane which lines them, and not by the fluid they convey to the mouth.

Analagous formations in other parts he accounts for in the same way. The calculus incrustations that are found, upon a sound, that has remained in the bladder for a long time, on its removal, and from subjects, in whom no previous disposition to gravel had existed, he supposes to be the result of the irritation produced by the instrument in the mucous membrane of this viscus. In replying to this part of his argument in support of his theory that salivary calculus is furnished by the exhalents of the mucous membrane of the mouth, Mr. Bell, says, "The previous non-existence of calculus in the bladder cannot be deemed any proof that the elements of its composition had not been held in solution in the urine, requiring only the occurrence of any extraneous body in the bladder to serve as a nucleus for its deposition. This view of the subject is amply confirmed by the fact, that depositions, both of the lithic salts and of the triple phosphate, the bases of the usual varieties of urinary calculi, are constantly formed from the urine after its expulsion from the bladder."*

It is unfortunate for M. Delabarre, that he drew this analogy, for Mr. Bell has shown it to be conclusive against the theory which he intended to establish by it, "and," says this author, "that salivary calculus, or tartar of the mouth, is deposited in a similar manner from the saliva, is, I think, directly proved, or at least, supported with the highest degree of probability by every circumstance connected with its formation." The fact too, that it is always found in largest quantity on the teeth opposite the mouths of the salivary ducts, is a strong argument of itself, in favour of the theory that it is a salivary production; but, still more conclusive is, that of its formation within the very channels themselves of these conduits.

The theory of M. Delabarre is insufficient for the explanation of its deposition here, for, it is not at all presumable, that an inflammation would seize upon a single point of the mucous membrane of one of these passages, without affecting it to a considerable extent. The most probable cause of its formation in these conduits, therefore, appears to me, to be the accidental precipitation of a particle of it from the saliva on its passage through them, and which, becoming entangled in the mucus, is detained where it afterwards serves as a nucleus for its deposition.

Of the existence of the elements of its composition in the saliva there can be no question. Chemical analysis of this fluid, direct from the glands that secrete it, place all doubt upon the subject at rest. It may also exist in solution in the mucous fluids, but that it does, we are not so well assured.

The circumstance that the deposition of this substance on the teeth is always accompanied by inflammation of the gums, M. Delabarre seems to rely upon as conclusive in favour of the correctness of his views of the manner of its formation. But here again, he is not more fortunate. The inflammation of which he speaks, is the effect, and not the cause, as he supposes, of its deposition. The soft white layer of tartar, of which he speaks as observable on the gums, when diseased, is nothing more than thick, hardened mucus. I have repeatedly examined it, and am therefore, well assured of the correctness of this assertion.

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* Anat. Phys. and Diseases of the Teeth, page, 195.

The deposition of tartar on the teeth of one side of the mouth, without a similar deposite on the corresponding ones of the opposite side, does not furnish the least shadow of evidence in support of the doctrine that this substance is an exhalation from the sanguinous capillaries of the mucous membrane of the gums. The mastication of food, with most persons, is principally performed by the teeth on one side of the mouth, and, with the fact that this function prevents, in a considerable degree, the accumulation of tartar on the organs immediately concerned, every dental practitioner must be conversant. Hence, its frequent collection on those of one side, and not on those of the other. And, that it is ascribable to this, is susceptible of positive proof. If, on the removal of the tartar from the teeth of a person, in whose mouth it had only collected on those of one side, mastication be afterwards altogether performed on these, it will not re-accumulate on them, and if the requisite attention to the cleanliness of his denture be not properly observed, it will soon collect on those of the other side, where it had not before been deposited, or, if deposited, had not remained. I have frequently requested patients to do this, and the foregoing has almost invariably been the result, which, was its formation dependent on inflammation of the gums, would not have been the case.

Again, it often happens that disease is excited in the gums, and of a severe character, by the use of mercurials and other causes, and yet, but a small quantity of tartar collects on the teeth; but, that any condition of the general system, or of the mouth, tending to increase the viscosity of the fluids of this cavity, promotes its formation, is undeniable. There are, however, some temperaments much more favourable to its production than others, and, it is a fact, equally well established, that the mucous membranes of those, in whose mouths it accumulates in largest quantity, are most irritable, and their buccal fluids most viscid.

From all the light, therefore, that has been thrown upon this subject, the conclusion, that this earthy matter is a salivary production, to me appears irresistible, and, the following seems to be the manner of its formation.

It is precipitated from the saliva, as this fluid enters the mouth, on the surfaces of the teeth, opposite the openings into the ducts, from which it is poured. To these, its particles become aglutinated by a mucus, that is always found, in greater or less quantity, upon them. Particle after particle is afterwards deposited, until it sometimes accumulates in such quantities that nearly all the organs are almost entirely enveloped in it. It is always, however, found in greatest abundance on the outer surfaces of the superior molares, and the inner surfaces of the inferior incisors, and it is opposite to these that the mouths of the salivary ducts open.

All persons are subject to salivary calculus, but not alike; it collects on the teeth of some in much larger quantities than it does on those of others, and its chemical and physical characteristics are exceedingly variable. It is, sometimes, almost wholly composed of calcareous ingredients; at other times these constitute but about, or little more than one-half of its substance,—the balance being made up of animal matter. Nor is its colour more uniform. Sometimes it is black, at other times it is of a dark, pale, or yellow brown, and in some instances it is nearly white. There is, also, a difference in its density. In the mouths of some persons it has a solidity of texture nearly equal to that of the teeth themselves, while in those of others it is so soft that it can, with ease, be scraped from the teeth with the thumb or finger nail. The black kind is the hardest, and as it approaches in colour the white, it becomes softer.

The effects that result from the presence of this substance upon the teeth are always pernicious, though sometimes more so than others. An altered condition of the fluids of the mouth, diseased gums, and not unfrequently the gradual destruction of the alveolar processes, and the loosening and loss of the teeth, are among the consequences that arise from it. But besides these, other effects are sometimes produced by it, among which the following may be enumerated: tumours, and spongy excrescences of various kinds of the gums; necrosis and exfoliation of the alveolar processes, and portions of the maxillary bones, hemorrhages of the gums, anorexia and derangement of the whole digestive apparatus; foul breath, catarrh, cough, diarrhœa, diseases of various kinds in the maxillary antra and nose, pain in the ear, headache, melancholy, hypochondriasis, &c. The character of the effects, however, both local and constitutional, that are produced by it, depends upon the quantity and consistence of the tartar, and the temperament and state of the general health; and the two former of these, are determined by the two latter, and the attention that is paid to the cleanliness of the teeth. If this last be properly attended to, salivary calculus, no matter how great the constitutional tendency to its production may be, will not collect upon the teeth. The importance, therefore, of its constant observance, cannot be too strongly impressed upon the mind, and especially of those in whom there exists a great tendency to its deposition.

Salivary calculus collects in but very small quantities on the teeth of persons possessed of the most perfect constitutions, and, even on these it is seldom found, except on the inner surfaces of the lower incisors next the gums. It is then black, or of a dark brown, dry, and almost as hard as the teeth, to which it adheres with great tenacity.

It rarely happens that any unpleasant effects arise from the presence of this kind of tartar upon the teeth. The general health is never affected by it, and the only local injury that results from it is a slight turgescence of the edge of the gums in immediate contact with it.

The indications, therefore, of this description of tartar are favourable, both with regard to the teeth, gums and organism generally. The teeth upon which it is found are of an excellent quality and rarely affected with caries. They are possessed of those characteristics which have been represented as belonging to those of the best kind, and teeth of this description are only found among persons of good innate constitutions.

There is another kind of black tartar differing from that which has just been described in many particulars. It is found in the mouths of those, who, though their innate constitutions were good, have nevertheless had their physical powers much enervated by privation of the necessary comforts of life, or disease, or intemperance and debauchery, and most frequently by the last. It is found in large quantities on the teeth opposite the mouths of the salivary ducts; it is exceedingly hard, and is aglutinated so firmly to the organs incrusted in it, that it is with the greatest difficulty that it can be removed from them; it is very black; has a rough and uneven surface, and is covered with a glairy, viscid and almost insufferably offensive mucus.

The presence of this kind of salivary calculus is attended with very hurtful consequences, not only to the gums, alveolar processes and teeth, but also, to the general health. It causes the gums to inflame, swell, suppurate and recede from the teeth,—the alveoli to waste, and the teeth to loosen, and frequently to drop out. The secretions of the mouth are also vitiated by it, and thereby rendered unfit to be taken into the stomach. Hence, as long as it is permitted to remain on the teeth, neither the skill of the physician, nor the best regulated regimen, though they may afford partial and temporary relief, will fully restore to the system its healthy functions.

As this kind of tartar is seldom, if ever met with, except among persons, who have had excellent constitutions, the teeth on which it is deposited are generally sound, and, in this condition, they are often caused, by the effects which it produces upon the gums and alveolar processes, to loosen and drop out. Whole sets of the best constituted teeth, are in this way frequently destroyed.

The dark brown tartar is not as hard as either of the descriptions of black. It sometimes collects in tolerably large quantities on the lower front teeth, and on the first and second superior molares; it is also often found on all the teeth, though not in as great abundance as on these. It does not adhere to the teeth with as much tenacity as either of the preceding kinds, and can, therefore, be more easily detached from them. It exhales a more fœtid odour than the first, but is less offensive than the second.

The persons most subject to this kind of tartar are of mixed temperaments,—the sanguinous, however, almost always predominating. They may, perhaps, be denominated sanguino-serous and bilious. Their physical organization, though not the strongest and most perfect, may nevertheless, be considered very good. But, being more susceptible to morbid impressions, their general health is less uniform, and more liable to impairment than those possessed of the most perfect constitutions.

The effects arising from accumulations of this description of salivary calculus on the teeth, both local and constitutional, are less hurtful than that last noticed, but like that, it causes the gums to inflame, swell, suppurate, and to retire from, and expose the necks of the teeth, the alveoli to waste, the teeth to loosen and sometimes to drop out. A vitiated state of the juices of the mouth, also results from its presence, or rather from the effects which it produces upon the gums and alveolar processes.

Salivary calculus that is of a pale or yellow, brown-colour, is of a much softer consistence than that which is dark, and is seldom found upon the teeth of persons, except those of bilious temperaments, or those in whom this disposition preponderates. It has a rough, and for the most part, a dry surface; it is found in large quantities on the teeth opposite the mouths of the salivary ducts, and it sometimes happens that every tooth in the mouth is completely incrusted with it. It contains less of the earthy salts and more of the fibrina and animal fat than that of any of the foregoing descriptions, and from the quantity of vitiated mucus in it and adhering to it, has an exceedingly offensive smell. It is somemes, though not always, so soft that it can be crumbled between the thumb and finger.

Inflammation, turgescence and suppuration of the gums, inflammation of the alveolo-dental periostea, the destruction of the sockets and loss of the teeth, and an altered condition of the fluids of the mouth, are among the local effects that arise from the long-continued presence of large collections of this kind of tartar on the teeth. The constitutional effects are not much less pernicious. Indigestion and general derangement of all the assimilative functions, are among the most common. If the deposition be not large, inflammation and sponginess of such parts of the gums as are in immediate contact with it, and fœted breath, are the principal of the unpleasant consequence that are produced by it.

White tartar rarely collects in very large quantities, and though most abundant on the outer surfaces of the first and second superior molares, and the inner surfaces of the lower incisors, it is nevertheless frequently found on all the teeth. Its calcareous ngredients are less abundant than those of any of the preceding descriptions. Fibrina, animal fat, and mucus, constitute considerably more than one-half its substance. It is very soft, seldom exceeding in consistence common cheese curd, and to which in appearance, it bears considerable resemblance. Although it exerts but little mechanical irritation upon the gums, it notwithstanding, from its acrid qualities, keeps up a constant morbid excitement in them. Its effects, however, upon the teeth, are by far more deleterious than any other description of salivary calculus. It corrodes their enamels, and causes rapid decay of the organs. The fluids of the mouth are also vitiated by it.

It is only upon the teeth of persons of mucous dispositions, or those who have suffered from diseases of the mucous membranes, or those in whom these have been more or less involved, that this kind of tartar accumulates.

There is one other kind of tartar that is described by dental writers. It, however, as I have on another occasion said,* is of a dark green colour, and is seen more frequently on the anterior surfaces of the upper teeth occupying the front part of the mouth, than on any of the others. Its resemblance is more that of a stain on the enamel than salivary calculus. Children and young persons are more subject to it than adults, though it is occasionally observed on the teeth of the latter. It is exceedingly acrid, and has the effect of decomposing the enamel; the margins of the gums around the teeth having it on them, are inflamed, and the sanguinous capillaries of their whole substance appear to be distended and more than ordinarily languid.

This kind of discolouration of the enamel is indicative of an irritable condition of the mucous membranes and viscidity of the fluids of the mouth. Sour eructations, vomitings, diarrhœa and dysentery are not unfrequent with those whose teeth are thus affected.

OF THE CHARACTERISTICS OF THE FLUIDS OF THE MOUTH.

In treating upon the physical characteristics of the fluids of the mouth, it will not be necessary to dwell at much length on the effects produced by them, when in a morbid condition, on other parts. Concerning their agency in the production of caries of the teeth, I shall add one or two more remarks.

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* See my Practical Treatise on Dental Surgery, pp. 224-5.

Doctor Samuel K. Mitchell, in a letter addressed to Thomas Charles Hope, M. D. of Edinburg, dated October 10th, 1796, has proven that an acid is formed in the mouth capable of decomposing the enamel and bony structure of these organs. From his remarks upon the subject, I will quote one or two passages. "From the known disposition of oxygen," says this distinguished writer, "to combine with septon, and form the septic acid, it appeared to me probable, that it would be formed occasionally in the human mouth, from the remains of food adhering to the teeth, sticking between them, and corrupting them. If this was the case, this acid ought to unite with the calcareous earth of the teeth, and form the septite of lime, which might be washed away by the spittle, or probably, in some instances, concrete upon the teeth themselves: and, if formed there, the acid might be expected to corrode the enamel, lay bare the bony part, and bring on caries; or incrust the inside, irritate the gums and occasion soreness and bleedings.

"In order to determine whether these things were so, I procured from a dentist a quantity of the substance called 'the tartar of the teeth," which I supposed might contain some septite of lime, and subjected it to a number of experiments. Having sometime before received complaints from the merchants of Glasgow of the faulty quality of the potash supplied from New York; and having been requested by a member of the Chamber of Commerce to visit with him the stores of the inspectors of those articles in the city of New York, I had collected samples of potash and pearlash of the first qualities, with the view of making experiments upon them.

These salts being in their caustic state, had been placed in separate glasses, to attract water and carbonic acid from the atmosphere; and after standing for several months, the ferruginous and earthy parts having subsided, beautiful crystals of the alkali were formed at the bottom of the liquor. A solution of these crystals was made in water that had been boiled sometime, to extract the air, and precipitate some of its earth; and to this solution of potash was added a parcel of the yellowish, earthy matter, scraped from the teeth, which had been previously reduced to powder in a mortar.

Instantly, on mixing them, bubbles of air were set loose and thickly floated on the surface of the mixture; and by their long continuance without bursting, seemed to indicate a sort of tenacity in the fluid, derived from animal mucilage.

The coarser part of the earthy matter, soon sunk to the bottom; but the finer particles took a longer time to settle down; yet, in a few minutes, even before the liquor had become clear, a piece of clean paper dipped in the solution, and dried before the fire, deflagrated on being burned, and emitted numerous flashes and sparkles, after the manner of saltpetre, while no such lucid or radient appearance was evident on setting fire to paper that had been dried after dipping in a solution of the alkali alone."*

If Dr. Mitchell had repeated this experiment with tartar taken from the teeth of different individuals, and of different degrees of density, he would have found that the quantity of septic (nitrous) acid that it contained, varied, and that its presence is more decided in soft tartar than in that which is hard; he would have discovered also, that the acid was contained in the viscid and vitiated mucus and saliva that penetrated it, and adhered to its surface. This is proven by the fact, that a mixture of these fluids when in a vitiated state, instead of tartar, with the alkaline solution prepared in the manner as described by Dr. M. will furnish precisely the same results. If the salivary and mucous fluids employed in this experiment be taken from around and between the teeth of a person affected with bilious or any severe febrile disease, the result will be more satisfactory.

The manner in which I have procured them, has been the following. I took three or four strans of floss silk, and passed them successively round five or six teeth, just under the free edge of their respective gums, and to absorb all the moisture with them I possibly could, I drew the ends backwards and forwards several times. The silk thus used, I then laid aside, and took several other strans, with which I repeated the operation on several other teeth, and so on, until I had passed them round all that were in the mouth. Thus charged, these several strans of silk were immersed in an alkaline solution prepared in the manner as described by Dr. Mitchell. Into this mixture a piece of clean, white paper was afterwards dipped, and after it had dried, set on fire. In burning, it emitted bright sparks.

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* Vide, American Journal of Dental Science, vol. 1, pages 80—1.

The object in obtaining these fluids from between the teeth and under the edges of the gums, is, because they are, generally, retained here longer than they are in any other part of the mouth, and consequently are less pure. The experiment, if made with saliva, as spittle from the mouth of a person in the enjoyment of any thing like tolerable health, will fail to produce the result here described.

The acidity of these juices when in a vitiated and viscid state, may be tested by a more simple experiment, which consists in moistening a piece of blue paper, died with turnsole, with them. If they be obtained from between the teeth and beneath the edges of the gums, they will, in a short time, turn the paper red.

If, then, these fluids, when in a morbid condition, are possessed of acid qualities, and that they are, is, I think, well established, they must, necessarily, exert a deleterious action on the teeth, and that the decay of these organs is attributable to this, I am fully persuaded.

But to return,—the saliva, in healthy persons, having good constitutions, has a light, frothy appearance, and but very little viscidity. Inflammation of the gums, from whatever cause produced, increases its viscidity, and causes it to be less frothy. In a healthy state, it is inodorous, floats upon and mixes readily with water, but when in a viscid or diseased condition, it sinks and mixes with it with difficulty.

Irritation in the mouth, from diseased gums, aphtheous ulcers, inflammation of its mucous membrane, the introduction of mercury into the system, or the taking of any thing pungent into it, increases the flow of this fluid, and causes it to be more viscid than it is in its natural and healthy state.

In treating on the signs from the saliva, Professor Schill, says, "The sympathetic affection of the stomach in pregnancy is sometimes accompanied by salivation, which in this case mostly takes place after conception, and sometimes continues to the time of delivery. It is also soberved to occur in weakened digestion, in gastric catarrhs, after the use of emetics, in mania, in what are called abdominal obstructions, in hypochondriasis and histeria; salivation occurs during the use of mercury or antimony.

"In confluent small-pox, salivation is a favourable sign. If it cease before the ninth day the prognosis is bad. In lingering intermittents, salivation is sometimes critical; more frequently in these affections it precedes the termination in dropsy.

"Diminution of the salivary secretion, and, in consequence of this, dryness of the mouth, is peculiar to the commencement of acute diseases, as also to the hectic fevers occasioned by affections of the abdominal organs. If the flow of the saliva stop suddenly, there is reason to apprehend an affection of the brain.

"Thick viscid saliva occurs under the same circumstances as the diminution of the salivary secretion, especially in small-pox, typhus, and in hectic fevers. It is thin in ptyalism. In gastric diseases where the liver participates, it becomes yellow or green; by the admixture of blood it may assume a reddish colour; in pregnant or lying-in-women, it is sometimes milky; an icy cold saliva was observed by the author in face-ache.

"Frothy saliva from the mouth is observed in apoplexy, epilepsy, hydrophobia, and in the histerical paroxysm."*

Dr. Bell, editor of the Select Medical Library and Bulletin of Medical Science, in a note to the work from which I have just quoted, says, "acid saliva is regarded by M. Donné, as indicative of gastritis, or deranged digestion. Mr. Laycock," he observes, "on the other hand, infers from numerous experiments on hospital patients, that the saliva may be acid, alkaline, or neutral, when the gastric phenomena are the same. In general, Mr. L. remarked, that it was alkaline in the morning, and acid in the evening."

I have had occasion to observe, that the acid quality of the saliva was more apparent, and more common in lymphatic, mucous and bilious dispositions, than in sanguinous or in sanguino-serous persons, and that weakened or impaired digestion always had a tendency to increase it.

M. Delabarre, says, "When this fluid," (the saliva,) "has remained in the mouth some moments, it there obtains new properties, according to each individual's constitution and the integrity of the mucous membrane, or some of the parts which it covers.

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* Outlines of Pathological Semeiology; edition of the Select Medical Library, pp. 173–4.

"In subjects who enjoy the best health, whose stomach and lungs are unimpaired, the saliva appears very scarce, but this is because it passes into the stomach almost as soon as it is furnished by the glands that secrete it. It only remains long enough in the mouth, to mix with a small quantity of mucus, and absorb a certain portion of atmospheric air, to render it frothy.

"On the other hand, the saliva of an individual, whose mucous system furnishes a large quantity of mucus, is stringy and heavy; is but slightly charged with oxygen, contains a great proportion of azote and sulphur, and stains silver."*

Increased redness and irritability of the mucous membrane of the mouth, is an almost invariable accompaniment of general acidity of these fluids. Excoriation and aphtheous ulcers of it, and bleeding of the gums also frequently result from this condition of the salivary and mucus juices of this cavity.

Anorexia, languor, general depression of spirits, head-ache, diarrhœa, and rapid decay of the teeth, are very common among persons habitually subject to great viscidity of the buccal fluids. It is likewise among subjects of this kind, and particularly when the viscidity is so great as to cause clamminess of these juices, that the green discolouration of the enamel of the teeth, mentioned in a preceding part of this inquiry, is most frequently met with.

OF THE PHYSICAL CHARACTERISTICS OF THE LIPS.

The indications of the physical characteristics of the lips are more general than local, and the observations of Laforgue and Delabarre on this subject, leave little to be added. I cannot therefore, do much more than repeat what they have said.

"The lips," says, Delabarre, "present marked differences in different constitutions. They are thick, red, rosy or pale, according to the qualities of the arterial blood that circulates through their arteries."

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* Vide, Traite de la Seconde Dentition.

Firmness of the lips, and a pale rose-colour of the mucous membrane that covers them, are, according to Laforgue, indicative of pure blood, and as a consequence of a good constitution. Redness of the lips, deeper than that of the pale rose, is mentioned by him, as one of the signs of sanguino-serous blood. Soft, pale lips are indicative of lymphatico-serous dispositions. In these subjects the lips are almost entirely without colour. When there is a sufficiency of blood the lips are firm, though variable in colour, according to the predominancy of the red or serous parts of this fluid.

Hardness of the lips and redness, both of them, and all the soft parts of the mouth are enumerated among the signs of plethora. Softness of the lips, without change of colour in their mucous membrane, is spoken of by this last author as indicative of deficiency of blood; and, softness and redness of the mucous membranes of the lips are signs that the blood is small in quantity and sanguino-serous.

Serous *enemie* and pale blood are indicated by want of colour and softness of the lips, and general paleness of the mucous membrane of the whole mouth.

"The fluids contained in the vessels," says Laforgue, in the three foregoing forms of enema, "yield to the slightest pressure, and leave nothing between the fingers but the skin and cellular tissue."

In remarking upon the signs of the different qualities of the blood, the above mentioned author asserts that the constitution of children, about the age of six years, cannot, by a universal characteristic, be distinguished, but that the lips, as well as other parts of the mouth constantly betoken the "quality of the blood and that of the flesh;" and, "consequently, they proclaim health or disease, or the approach of asthenic and adynamic disorders, which the blood either causes or aggravates."

Again, he tells us that the blood of all children is "superabundantly serous," but that it is redder in those of the second constitution than it is in those of any of the others; and that this is more distinctly indicated by the colour of the lips. "This quality of the blood," says he, "is necessary to dispose all the parts to elongate in their growth. When the proportions of the constituent elements of the blood are just, growth is accomplished without disease. If the proportions are otherwise, then they should be for the preservation of the health, or if one or more of its elements be altered, health no longer exists, growth is arrested altogether, or is performed irregularly. The nutritive matter is imperfect,—assimilation is prevented or impaired. On the other hand, disintegration decomposes the patient; if death does not sooner result, it will consume him by the lesion of some vital organ."[*]

To the correctness of the foregoing observations every experienced and inquiring dental practitioner can bear witness. The changes produced in the colour of the blood by organic derangements are at once indicated by the colour of the lips.

The accuracy of Laforgue's observations on the indications of the physical characteristics of the lips has been fully confirmed by subsequent writers. Delabarre, in his remarks on the semeiology of the mouth, has added nothing to them.

"The secretion of the lips," says Professor Schill, "has a similar diagnostic and prognostic import to that of the tongue and gums. They become dry in all fevers and in spasmodic paroxysms. A mucous white coating is a sign of irritation or inflammation of the intestinal canal; accordingly, this coating is found in mucous obstructions, in gastric intermittent fever, in mucous fever, and before the gouty paroxysm. A dry brown coating of the lips is a sign of colliquation in consequence of typhus affection; it is accordingly observed in typhus, in putrid fever, in acute exanthems, and inflammations which have become nervous."[†]

The appearance of the lips, however, do not present so great a variety as those of other parts of the mouth, for the reason that they are not as subject to local diseases, but their general pathognomic indications, are, perhaps, quite as decided.

OF THE PHYSICAL CHARACTERISTICS OF THE TONGUE.

The appearances of the tongue, both in health and disease, are regarded by physicians as furnishing more correct indications of the state of the constitution and general health, than those of any of the other parts of the mouth. It is asserted, however, by others, and those, too, who have the very best opportunities for inspecting the various parts of this cavity, that the lips and gums furnish as plain and decided indications as the tongue. That the state and quality of the blood can be as readily ascertained by an examination of these, as by that of the tongue, is, I believe, undeniable, but that the pathological condition of the body can be, is a question which I shall leave for others to decide.

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[*] Vide, *Séméiologie Buccale et Buccamancie.*

[†] Vide, *Pathological Semeiology*, p. 152.

So far as the quality of the blood and the temperament of the subject are indicated by the colour of the tongue, the remarks that have been made concerning that of the lips will be found applicable here. For, that of the one, is as much influenced by them as is that of the other. It will, therefore, be unnecessary to recapitulate what I have before said.

The effects produced on the mucous membrane of the tongue, by disease in another part, are said to be analagous to those produced on the general integument. So, also, are the changes of its colour, consistence, humidity and temperature similar to those of the skin. We are likewise told that the changes of the coating of it agree with analagous changes of the perspiration, and that these phenomena are more decided in acute than in chronic affections.*

But the diagnostic and prognostic indications of the tongue, vary according to the temperament and constitutional predisposition of the individual. The physician, therefore, should acquaint himself with its appearances in health, to be enabled to determine correctly its indications in disease. He should, likewise, inform himself of the changes that are produced in its appearances by certain morbid conditions of the body. In some subjects it is always slightly furred, especially near its root, and rather dry; in others it is always clean and humid; in some again, it is always red, and in others pale.

Professor Schill divides the signs of the tongue into objective and subjective. To the objective, "the changes of size, form, consistence, colour, temperature, secretion," and those of its "motion belong;" and "to the subjective, the anomalous sensations of taste." I do not know, however, that any advantage can be derived from this classification.

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* Vide, Professor Schill's Semeiology.

In enumerating the pathognomic signs of the tongue, this author says that hypertrophy, inflammation or congestion, may occasion its enlargement; and that inflammatory swelling of it, when arising from acute diseases, such as "angina, pulmonary inflammation, measles, plague, or variola, yields an unfavorable prognosis. Even non-inflammatory swelling of the tongue, is a dangerous phenomenon, in acute diseases, especially cerebral, which are combined with coma. If it be the consequence of mercury, of the abuse of spirituous drinks, of gastric inflammation, of chlorosis, of syphilis, or if it occur in histeria or epilepsy, the prognosis is not dangerous; but the disease is always the more tedious where the tongue swells than where it does not. It is enlarged, also, by degenerescence and cancer."

"Diminution of the size of the tongue takes place where there is considerable emaciation. In this case it continues soft and movable. If, in acute states, the tongue becomes small, and is, at the same time, hard, retracted, and pointed; the irritation is very great, and the prognosis bad. This sign occurs more especially in typhus, in the oriental cholera, in inflammation of the lungs, and in acute, cerebral affections. In histeria and epilepsy, this phenomenon has no unfavourable import."

Internal maladies, he says, seldom causes the form of the tongue to change, but, that the slightest change arising from chronic irritations of the stomach, chronic dyspepsia, and acute exanthems, is enlargement of its papillæ. In cases of protracted dyspepsia, the edges of the tongue sometimes crack, and in paralysis and epilepsy, it becomes elongated.

In acute diseases, a soft tongue is a favourable indication, and flaccidity of it, that of debility.

Humidity of the tongue, he tells us, is a favourable sign, and that dryness of it occurs in acute or violent inflammations and irritations, and more particularly when seated in the intestinal canal, and respiratory organs, as in the case of diarrhœa, typhus, pneumonia, gangrene of the lung, pleuritis, peritonitis, enteritis, catarrhus gastricus, gastritis, inflammation of joints, &c. Among the higher degrees of dryness, he enumerates the rough, the fissured and burnt tongue, as furnishing still more unfavourable indications, informing us at the same time that if these be not accompanied by thirst, they prognosticate a fatal termination. The abatement and crisis of the disease is indicated by the tongue's becoming moist.

Dr. Bell, of Philadelphia, in a note to Professor Schill's observations on the tongue, says, "a rough, and dry, and even furred tongue, is seen in some dyspeptic persons, who sleep with the mouth open; and although it indicates an irritation of the digestive organs, it is not of a bad augury." Bilious persons, not unfrequently, though not troubled with any manifest symptoms of gastric or intestinal derangement, or any other apparent functional disturbance, have a furred tongue in the morning.

Paleness of the tongue, we are told by Professor Schill, is a sign of a serous condition of the blood, of chlorosis, of great loss of blood, of chronic disorders, of sinking of the strength in acute maladies, assuming a "nervous form, as typhus and scarlatina maligna. It is also found," says he, "in enteritis and dysentery, when but little fever is present." He infers from this, that paleness of the tongue is caused by the "drawing of the fluids downwards," but it is often observed in persons who enjoy tolerably good health. Lymphatic dispositions, as has been before remarked, are peculiarly subject to it.

Again he observes, that a very red tongue is indicative of "violent inflammation, mostly of the intestinal canal, but also of the lungs and of the pharynx and acute exanthems." He regards the prognosis as bad, when a furred tongue "in acute diseases of the intestinal canal becomes clean and very red," if the change be not accompanied with the return of the patient's strength. "But," he continues, "if the debility is not considerable, and the tongue becomes clean and very red, whilst other febrile symptoms continue, a new inflammation may be expected." But, even in affections like these, the redness of the tongue is always more considerable in sanguinous, than it is in lymphatic or lymphatico-serous subjects. So that in the forming of a prognosis from this sign, the temperament of the individual should never be overlooked.

Proceeding with the description of the signs of this organ, he says, "the tongue becomes a blackish-red and bluish-red in all serious disturbances of the circulation and respiration, as also in severe diseases of the lungs and heart, as catarrhs, suffocations, asthma, extensive inflammation of the lungs, carditis, Asiatic cholera, plague, confluent small-pox, and putrid fevers. It becomes black and livid in cases of vitiation of the blood, more especially in scurvy, at the setting in of gangrene, and in phthisis, when death is near at hand."

Among the diseases mentioned as giving rise to an increase of the temperature of the tongue are glossitis, violent internal inflammation and typhus; and, coldness of this organ, is observed to take place in Asiatic cholera, and at the approach of death.

The signs from the secretion of the tongue are thus enumerated. A clean and moist tongue are favourable indications, but a clean, dry and red tongue, as are seen in slow nervous fevers, acute exanthems and plague, are bad auguries. A furred or coated tongue is said to occur chiefly, in intestinal disorders, diseases of the lungs, skin, and in rheumatic affections. The coating is said to vary in "colour, thickness, adherence, and extent," and different kinds of secretion from the mucous membrane of this organ are mentioned as occurring in different diseases, and it should have been added in the same disease in different temperaments.

After describing the various kinds of coating on the tongue, together with their respective indications, which it is not necessary here to enumerate, the occurrence of false membranes and pustules, resulting from peculiar forms of mucous secretion are next mentioned. The former show themselves either as small white points, or large portions, and sometimes they are said to envelope the whole tongue. Their colour is "sometimes white, sometimes yellow and sometimes red," and the greater the surface covered by them, the more unfavourable the prognosis is regarded. "Pustules on the tongue," says the author, "are sometimes idiopathic, but in most cases symtomatic. They are either distinct or confluent; the confluent are the worse. Those which are hardish and dry, and also those which are blue, and those of a blackish appearance, which sometimes occur in acute diseases, are of an unfavourable import." On the other hand, those which have a whitish, soft, moist and semi-transparent appearance, are less unfavourable, and when the eruption or aphthæ is repeated, it portends a longer continuance of the malady. To the following diseases, they are mentioned as being frequent accompaniments; namely, gastritis, catarrhs, enteritis, metritis, dysentery, cholera infantum, peritonitis, intermittent and typhus fevers, pluritis, pneumonia, and the third stage of pulmonary consumption. Their prognosis is said to be favourable, when "they appear with critical discharges after the seventh day," and unfavourable, when they occur as a consequence of a general sinking of the physical powers of the body.*

But it is unnecessary to enumerate all of the pathognomic indications of the various morbid phenomena that have been described by, semeiologists, I have already noticed more of them, than it was my my intention at first to have done, I shall, therefore, conclude the present inquiry, by simply observing, that the indications furnished by the physical characteristics, of not only the tongue, but those also, of the teeth, the gums, salivary calculus, the lips and fluids of the mouth, are, as I have here endeavoured to show, essential to the successful exercise of the duties of both the dental and medical practitioner.

ARTICLE IV.

Dissertation on the Pursuit of Professional Eminence. Read before the American Society of Dental Surgeons, at their annual meeting, in the city of Philadelphia, August 10, 1841. By Solyman Brown, M. D., D. D. S.

The popular philosophy of mankind, has long assented to the childish assumption, that the *grades* in society, the *diversities* of human attainments, and the *eminence* to which some men arrive in comparison with others, are the arbitrary allotments of nature, or the capricious contingencies of chance.

This doctrine—one of the miserable bantlings of that hoodwinked fatalism which refuses to acknowledge the indissoluble connection between cause and effect, is equally well designed to excuse the folly of that portion of mankind who wander from the pathway of happiness and honour; and to mar the laurels of that other class of men who rise, by their industry, their perseverance and their enthusiasm, to the mountain summit of earthly renown.

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* Vide, Professor Schill's Semeiology.

The humble soldier bearing his musket among the rank and file of the armies of revolutionary France, and acting as a mere piece of machinery, had no better conception of the agencies which transferred the pupil of the polytechnic school to the throne of the empire, than that the "Little Corporal," was the soldier of fortune. He was not capable of tracing the successive steps by which this consummate commander contrived to elevate himself, with an industry that knew no fatigue, and a zeal that recoiled at no disappointment, above all the experienced generals and venerable marshals of his adopted country, who unanimously conspired, with shouts of acclamation, which caused Europe to tremble from the Baltic to the Euxine, to reward his *republican* virtues with an imperial crown.

Bonaparte, like all other men, was the artificer of his own fortunes, under the uniform law of superintending Providence, that, in like circumstances, like causes produce like effects.

If he became a general in Italy, it was because he had thundered at Toulon with a voice that awoke a sleeping nation to the magnitude of its destinies. If he conquered at Lodi, it was because he led his troops over its memorable bridge into the cannon's mouth. If he obtained the hand of the archduchess of Austria, together with a dispensation from the pope to sanctify his bigamy, it was because he had humbled both her father and his Holiness of Rome in the dust of his fields of battle.

On the other hand—if the star of his fortune went down in eternal night on the plains of Moscow and Waterloo, and if he perished miserably on a barren rock of the ocean, it was because he had outraged every form of religion and of law to gratify an insatiable ambition; repudiated and divorced the amiable Josephine without a crime; and, in the name of liberty, constituted himself a tyrant.

Cause and effect are just as manifest in all the history of the aspiring Corsican, as in the germinations, growth and fructification of the simplest plant, the seed of which is cast into the earth, and the perfection of which is ultimated by the elements. Nor is the instance of Napoleon by any means an exception to any general rule; the fortunes of the most insignificant individual of the human race, are regulated by the same great law of nature.

For the sake of making myself distinctly understood, I will advert to another example: for, as the inimitable Laurence Sterne, has justly remarked—"although an illustration is not a demonstration, nor the wiping of a looking-glass, a syllogism, yet both of them enable us to see more clearly."

Passing over the instance of Columbus, who became the discoverer of the new world because he was the most accomplished and daring navigator of his age, impelled by a perseverance of purpose which no discouragement could countervail; I advert to a more recent example and one not less in point.

Robert Fulton, effected a solution of the very difficult problem of applying the power of steam to the propulsion of boats, as a resulting and incidental effect of his protracted and indefatigable endeavours to construct torpedoes, and move them through the water, as well beneath as upon its surface, for the dispersion and destruction of hostile fleets.

Mechanics and aquatic machinery had been long the absorbing subjects of his reflections and experiments, and the transition was extremely natural from the explosion of his favourite system of sub-marine warfare, to the subject of his great invention.

But the mere mechanical preparation which he brought to bear upon his arduous undertaking, would have been of no avail, if he had not possessed that indomitable perseverance which could sustain discouragement, opposition, and ridicule, without dismay. When his individual resources were exhausted by tedious and expensive experiments, he had the talent to call to his aid the co-operation of the rich and the powerful. When the resources of his own country were inadequate to his purpose, he sought a foreign land; and when one of the great maritime nations of Europe refused or neglected to second his exertions, he repaired confidently to another.

If we trace with care the successive steps by which he arrived at the goal on which his imagination had so long rested with hope, we shall not fail to discover that no other individual of whom the history of the past gives us any account, pursued so firmly and incessantly the only practicable path to the particular tablet on the pyramid of fame, upon which he has inscribed his autograph.

Robert Fulton succeeded in bringing into general use the power of steam as applied to boats, because he employed more skilfully than any other individual who had prosecuted the same design, the means proper to that result. Why is John Milton the greatest poet who has employed the English tongue? Because by his industry and research he made himself decidedly the most learned man that ever courted the British muse. Why did Cicero stand pre-eminent among the orators of the Julian and Augustan ages? Read his luminous and voluminous productions on every subject connected with his high vocation, and you will learn the cause.

Depend upon it, my brethren, that in spite of all the contingencies of chance, and all the caprices of fortune, cause and effect have always existed, in most intimate connection, in all the history of man, and in all the providence of God.

There are, indeed, and always have been, fabulous legends in the realms of romance, concerning entities, without origin, and things created out of nothing; but I may safely challenge authentic history in any department of nature, or of art, to substantiate a single example, not merely of an effect without a cause, but of an effect without its adequate and appropriate cause.

In applying the foregoing principles to the subject of these remarks, which is the attainment of professional eminence, I shall be studiously brief, inasmuch as the time of the members of this society is quite too valuable to be wasted on empty declamation, or wire-drawn argument. Yet, I indulge the hope that a few moments assigned by our by-laws to this object, may be profitably spent in considering the means by which certain individuals in every department of human enterprise, and in our own profession as well as in others, obtain distinction and pre-eminence above their fellows.

The objects or ends for which this pre-eminence is sought, are various:—some benevolent, others selfish:—and these ends are, in all cases, wholly distinct from the means by which they are attained.

I wish it, therefore, to be distinctly understood, that, while I speak of professional eminence, and the means necessary to be employed, I neither justify, nor condemn the object of pursuit; because the complexion of this, depends wholly on the moral character of the motives.

If an individual aim at professional distinction for the sake of the pre-eminent uses which distinction will enable him to perform, his motives are virtuous in an eminent degree:—whereas, if personal aggrandizement, and the desire to rise at the expense of others' welfare, be the moving impulses of the mind, the morality of the motive is of a very questionable character.

It is for this reason that I shall limit my remarks, on this occasion, to the means of professional eminence, without regard to its end.

Again:—I shall not take it upon me to decide, on this occasion, whether permanent and real prosperity pertains most truly to exalted pre-eminence in professional notoriety and success, or to that happy mean which is equally removed from dangerous extremes.

Neither do I undertake to determine whether the prosecution of any one exclusive object of human pursuit, to the neglect of many other important ones, is conducive to the enlarged and permanent happiness of man.

My object shall be, simply, to trace the steps by which the giddy summit of renown, may be the most certainly attained.

And, in the first place, the individual who wishes to run, successfully, this race of aspiring ambition, must be careful in the outset to select the calling, for which early impressions and subsequent education shall have best prepared him. There is quite as much truth as poetry in the well-known hemistich:—

"Just as the twig is bent, the tree 's inclined," Bonaparte never could have become the founder of the respectable religious sect, known as Methodists; nor could John Wesley have consolidated a mighty empire on the ruins of the French Revolution, unless the early impressions, habits, and education of both, had been reversed, so that Wesley should have issued from the Polytechnic school, and Bonaparte, from the University of Oxford.

The early habits of Washington but illy prepared him to become the rival of Fulton or Whitney, in the successful combination of useful machinery; nor were either of the latter at all prepared by primary inculcations and habits of mind, to unfurl the banner of universal freedom on the castellated battlements of the world.

On this principle it is that I urge the necessity of making a suitable selection from among the numerous avocations of civilized society, in order to secure the first necessary step in the road to distinction. A mistake in this point, will of necessity be fatal. If Newton and Shakspeare had exchanged profession both would have remained alike unknown to fame. Subsequent exertions have little influence in correcting a fundamental error. The superstructure is nothing better than a house built upon the sand. There can be no reasonable question that in this, as in ordinary wedlock, more than one half at least of the professional abortions in civilized society, result from incongruous unions.

Else, why should a Cæsar Borgia, ever become a prelate; or a Richard Cromwell, lord protector of England? On what other principle did an imbecile Xerxes bring the myriads of Asia to fatten the fields of Greece, or the stupid cabinet of George the III. of England, attempt to subjugate the freemen of America? There may have been men in Persia, in the days of that unfortunate monarch, who could have led those countless armies to certain victory; as we know there were statesmen in England in the days of Lord North, who could have imparted to the ear of majesty, more salutary counsels. Let therefore, every individual who indulges the ambition of rising to professional distinction, see well to it, that he is not a Mercury attempting to handle the thunderbolts of Jupiter; for, although the former was one of the accredited gods of Olympus when he burned his fingers, he was meddling imprudently with the attributes of another.

In the second place: If any man would aspire to professional pre-eminence, he must have a singleness of purpose which concentrates all his energies to the object of pursuit, to the total or partial exclusion of every thing besides. The true path having once been found, it must be steadily pursued in preference to all the cross-roads and by-ways that may divert for a moment the attention of the traveller. It may, indeed, be long and tedious. Its very directness may induce fatigue. It may be barren of way-side verdure, over-arching shades, and exhilirating flowers. The lateral paths, on the contrary, may abound with tempting objects, enticing the beholder to turn aside for a moment in order to revive the senses with fairer scenery and fresher gales. But all these seductive allurements must be repulsed with a stoical indifference, and a steady eye must be kept upon the shining goal at the end of the race.

As well might the general of an army attempt to disperse the Grecian phalanx by sending his troops in scattered confusion over the field of battle, as the professional aspirant, presume to overmatch his competitors by dividing his energies among a diversity of pursuits.

Alexander was a soldier, Homer a poet, Mozart a musician, and Newton a mathematician, and neither of them either was, or desired to be any thing else. Other men have, indeed, been good generals, good poets, good musicians, and good geometers, without making these pursuits exclusive objects of affection; but the distinction of super-eminent belongs to those who have looked with a steady eye at a single object.

It, indeed, seems sometimes difficult to determine which among various objects of ambition, must be accounted the means, and which the end:—as for example, when an individual, high in professional distinction, like Sir Robert Astley Cooper,* combines with reputation great pecuniary emolument. It may, in such a case, be avarice, or it may be ambition, which imparts a healing impulse to the mind. But, as that which is a means, is mainly accessory to the end proposed, this seeming diversity of pursuit is perfectly consistent with absolute unity of design. Thus, Cæsar, when he borrowed forty thousand sesterces of a Roman banker to enable him to prepare for an expedition into Spain, declaring to a friend that he needed that sum to make him worth just nothing at all, desired the money to aid in accomplishing the purposes of his ambition; whereas a Rothschild may covet notoriety merely that his celebrity may advance his fortune.

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*Of this distinguished individual, so recently numbered among the dead, his biographer, Sir Benjamin C. Brodie, confidently declares "that he derived from his practice a larger income than was obtained by any other person, either in the medical profession or in any other."

This idea of making everything subservient to the principal object of the soul's idolatry, may be elucidated and confirmed by appealing to the history of any individual in any human calling, who has been absorbed in a single pursuit for a course of years. Observation has supplied us all with numerous instances of ultimate success attendant upon this singleness of design.

It is no part of my present purpose to apply these remarks to any other profession than that in which the members of this society are engaged. Let it suffice, therefore, to say, that the dental practitioner who aims at unrivalled distinction in his art, must "lay aside every weight" that would either retard his progress, or diminish the elevation of his flight. Is he fond of fashionable society—he must sacrifice his pleasure in this behalf and become the steady companion of his instruments, his patients, and his books. Has he any relish for the turmoil of political strife—the haunt of the politician must be exchanged for the laboratory of his art. Does he love hours of listless leisure and dreaming repose—he must shake himself from the cobwebs of drony apathy, and devote at least three-fourths of his hours to business, exercise, and study. Is he fond of the reveries of music and of song—he must hang his harp upon the willows, and abandon melody to the winds. Has he by early habit become enamoured of the long and luscious dinners of the epicure, and of the midnight revels of the bacchanalian—he must learn that lesson so difficult for young adventurers in the career of life, and restrain those wayward appetites which wage eternal warfare with fame and fortune. Is his heart susceptible of friendship—his companions must be those alone who can promote his design of greatness; and should he resolve to engage in the tenderest of mortal or immortal ties, and adopt a conjugal companion, he must seek for one who can suspend necklaces of gold and diamonds upon the idol of his ambition. In short, he must even divorce his Josephine, if a Maria Louisa can better secure the perpetuity of his fame.

Descending from these general principles of action, and fixing his attention on more minute particulars, he must never forget to arouse himself from his pillow at the dawn of day, and attire himself with care as becomes the gentility of his calling; after preparing himself by ablutions like the Roman athlætæ, for the vigorous prosecution of his diurnal course—to be ever on the alert to convert every thing to his use, bend every thing to his purpose, and transmute all the events of each successive day into so many ascending steps in the ladder of his ambition, so that, at the hour of midnight, when he has taken an account of his daily doings, he may throw himself upon his couch in exulting confidence that he has not lost an hour.

In the duties of his profession he must not only perform all parts of his work in the most approved and substantial manner, but he must impress the public with the value and importance of his individual services; invest his simplest operations with an air of mystery, and conceal his infirmities in the mists and combings of that prosperous billow upon which his bark is bearing him to the haven of renown.

Do any of my fraternal auditors whisper in my ear, that on conditions like these they cannot consent to labour their way to the mountain summit of professional pre-eminence? Be it so.

It is not for me to question either the virtue or the prudence of their choice. That idiosyncrasy of mental temperament which thirsts for exaltation in any single department of human knowledge or skill, to the neglect and contempt of every thing besides, may not, peradventure, afford the surest criterion of either wisdom or felicity.

There may be those, even in this little circle, who are not inclined to lavish the mighty energies of an immortal mind in any single merely temporal pursuit. They may deem it proper to make an outlay of just sufficient application and talent to the call- which affords' them maintenance; while other objects of at least co-ordinate importance, command a portion of their powers. They may be satisfied with mediocrity, or moderate eminence in their particular profession, on the condition that they superadd to this, other attainments of a valuable character. Some may desire to segregate from professional confinement a few happy hours in each successive day for exercise and recreation, deeming health of body and elasticity of mind, invaluable possessions. They may wish to add to these a few other hours to be consecrated to the claims of friendship, society and religion. Elegant literature may intrude its pretensions to occasional regard. The splendid developments of modern science, and the curious incidents of ancient history may come in, at times, for a share of intellectual devotion. Or, peradventure, the moral and intellectual culture of a rising family; the social and innocent pleasures which may be shared with a lovely wife and amiable children, may sometimes beguile a happy hour from the impious worship of the Moloch of wealth and the Dagon of ambition.

All these, and many more, are the enticing allurements by which an active imagination, and peradventure, the most solid judgment, may well be alienated from the ardent pursuit of that excess of professional celebrity, which a breath of detraction or the touch of death may dissipate forever!

But, although all the wise and good among my professional compeers, may not be inclined to sacrifice every other object of honourable pursuit in order to attain that solitary pre-eminence which rises in envied grandeur above the ordinary summits of human attainment, like an island of ice above the surrounding billows; which the sun, indeed, gilds with splendor, but which mortals avoid in dismay;—yet the noble mind would feel itself debased in any calling, to remain at a great remove from that honourable distinction which industry, talent and virtue may most certainly attain.

Nor is there any danger of instituting too high a standard of professional acquirement, consistent with our other duties to ourselves, to society, and to God; especially in times like these, when a mighty nation, comprising 17,000,000 of people, is literally overrun, from the Canadas to the Gulf of Mexico, and from the Atlantic to the Rocky Mountains, by a host of greedy adventurers, well nigh as numerous and as ignorant as the swarms of Egypt that devoured that fertile land!

Well might we be tempted to regret that we, too, had not an overflowing Nile to wash away their foot-prints, and reanimate the verdure which they have already trodden down!

In place of those multifarious armies which are yearly ushered into our profession after a few weeks preparatory qualification, (I might, perhaps, better say disqualification) in the offices of men whose original preparation was of the same character, may we not indulge a hope that the time will come when the standard established by this society, shall receive that support from an intelligent community, which will insure to the profession of dental surgery, in ages to come, men of education, talent, and integrity? If not, farewell forever to the general utility of dental science! And farewell to the enviable fame which might have attended, to he latest times, its well-instructed and honourable professors!

ARTICLE V.

The following letter from J. H. FOSTER, M. D., Surgeon Dentist was then read by the Recording Secretary.

New York, August 7, 1841.

MR. PRESIDENT AND GENTLEMEN:

Having had the honour of being selected at the last annual meeting one of the members, to prepare a Thesis, to be read at the ensuing annual meeting of the Society, I deem it my duty to apologize to you, for neglecting it. When I found the time had almost imperceptibly nearly elapsed, I resolved to devote a part of the present week to this object, but my professional duties have called for my attention to an unusual degree, and I find I am compelled to throw myself upon your indulgence.

There is a question which I wish to propose for the consideration of the society, and I trust I shall not be considered egotistical, in presenting my own opinions in regard to it. If they chance to differ with those of many of my professional brethren, I hope at least I may have the credit of being considered sincere. My only object is to arrive at the truth, by exciting attention to the subject, and if I am wrong I am open to conviction.

The question is this: Are there cases, where it is essentially advisable and important that teeth should be filled, in which gold foil cannot be used, and other articles be substituted so as to preserve the teeth a sufficient time to compensate for the operation?

My own opinion is, that in all cases in which a tooth is worth the attempt to preserve it, it may be filled with gold, however difficult of access the cavity may be, and however tedious and laborious may be the operation of excavating and filling, and that when so filled, the chance is that the tooth will last much longer, than when any other article is used.

I have always believed, and have had no reason yet to doubt, that a tooth can be filled with gold if it can be filled at all. I know there are those who contend that in certain cases, owing to the extreme difficulty of obtaining access to the cavity, it is impossible (to use a common phrase) "to make a gold filling stay in," and that they can put in something else which will remain. And again, that the teeth are sometimes so extremely sensitive after having been excavated, that they will not bear the pressure consequent upon packing a gold filling, and that in such cases tin foil, or some other article, (the mineral succedaneum perhaps,) will answer a better purpose. I am free to declare that I do not place any faith in this; I do not believe there can be a cavity so situated that a gold filling cannot be placed in it, if any other can; and I am equally firm in the belief, that any tooth which will bear to have tin foil, or any other malleable metal packed into it sufficiently hard to remain, will not be too sensitive to support a solid gold filling, if the operation is properly performed, and the proper precautions taken which the peculiar circumstances of the case may require. If I can be shown cases affording full proof to the contrary, I may be induced to change my views upon the subject; but so long as cases are continually coming under my observation, in which I see teeth rapidly wasting away, which have been filled with tin, and which the patient was told at the time of the operation could not be filled with gold, and I feel satisfied they might at that time have been preserved by the use of gold, I cannot but feel that I am justified in my opinions. One of many such cases I will cite as an example. A gentleman and lady called on me about two weeks since for advice in regard to a molar tooth, saying they had no doubt I should advise extraction. On examination I found it to be the only upper molar tooth left; the opponents were sound, and I determined to preserve it if possible. There was a large cavity in the centre of the tooth, with a tin foil filling remaining in it, the wall on one side of which was partially broken away, and the other edges rough and irregular. I filed down the surface until I found the edges of the cavity sufficiently strong to support a filling. I then commenced excavating, and although the interior of the tooth was much softened, and the diseased portion highly inflamed, I removed it effectually, without reaching the nerve, and could cut in any part of the cavity upon the healthy bone without pain to the patient. I then packed into this cavity, (which I have no hesitation in saying, was at least one-third deeper, and the circumference nearly twice as great, as when the tin foil was originally placed,) as solid a gold filling as I should place in an ordinary cavity. I have seen the patient twice since, and although I sometimes feel doubtful in such cases in regard to the permanency of the operation, yet in this case I have no doubt the tooth will remain serviceable for many years. I have entered into these particulars on account of the fact, that a gentleman of considerable eminence in the profession, when he filled this same tooth three years before, had declared that it was impossible for the tooth to be filled with gold at that time. Such cases are by no means isolated; I have no doubt most of you have often met with them. But the question has been put to me, by gentlemen of the profession, why use so costly an article, and put the patient to such an expense, in these extreme cases, when there is an uncertainty whether the operation will prove serviceable? In an answer, that if a tooth can be preserved for one, two, or three years by filling it with tin, there is a chance, nay a strong probability, that a gold filling will preserve it much longer, and there are no cases, which redound more to the credit of a practitioner in our profession, than those which are considered doubtful, and which his operation proves successful in the preservation of. I have often found cavities partly filled with tin, and finished off with a shallow gold filling, and when it has become necessary to refill the teeth, and the patient is made aware of the artifice which has been practised, the operator reaps the reward of it.

I can only regret that there are members of the profession, who rank high in point of reputation in the community, who will thus incur the risk of destroying a good name. I do not wish to impugn any man's motives in such a course of practice, he can do no one a greater injury than he does himself: my only desire is that the truth may be known, and the attention of the society awakened to these malpractices, in regard to the most useful and important operation of dental surgery. I have never since I commenced practice, used a single particle of tin foil, or any other malleable metal or compound, for filling teeth; gold foil of the finest quality I consider to be the surest and best article in all cases, and when I find a tooth in which I cannot use it, it is time for the operation of extraction.

Teeth are often filled with some of these articles merely for the sake of preserving them a few months, because the patient is unwilling to submit to the operation of extraction, when it is manifestly the duty of the operator to urge the necessity and importance of it. Patients who have confidence in their practitioner, will readily submit to this operation if his judgment approves it, by his appealing to their reason and reflection.

There are too many timid practitioners, who shrink from this operation, and are ready to embrace any alternative rather than perform it, and they will sometimes even tell their patients that it is inadvisable or extremely dangerous, and send them off with some inefficient application. It is certainly much less difficult to persuade a patient to decline an operation than to submit to one, and he who through culpable timidity refuses to perform it, when he knows it to be his duty, is no more qualified for the practice of his profession, than he who is ignorant of the fundamental principles of it.

I trust, gentlemen, that you will excuse these remarks thus hastily penned; and I hope the day will yet come when malpractices shall be corrected, the darkness of ignorance dispelled, and commensurate with the talents and worth of its professors, its extensive bearing upon health, and its happy influence upon society, dental surgery shall assume a corresponding rank among the medical sciences. Respectfully, your obd't serv't,

J. H. FOSTER.

In publishing other parts of the proceedings of the Society, we shall extract from the minutes, such portions only as we deem of general interest to the profession.—*Eds.*

ARTICLE VI.

FURTHER PROCEEDINGS OF THE SOCIETY.

The following gentlemen were elected members of the Society, in accordance with the provisions of the constitution and by-laws:

Wm. H. Burr, of Philadelphia; S. Dillingham, of Philadelphia; James Alcock, of New York; Charles Rowell, of New York; Geo. Washington Parmly, of New Orleans; David Roudolph Parmly, of Mobile; E. J. Dunning, of Buffalo, N. Y.; Chas. B. Foster, of Philadelphia; James Oscar Baldwin, of Newark, N. J.; William Ware, of Wilmington, N. C.; Frederick Crocker, of Sagharbour, L. I.; J. W. Shepherd, of Petersburg, Va.; James W. Cowan, of Dover, N. H.; Robt. McGrath, M. D. of Philadelphia; John C. McCabe, of Petersburg, Va.; Doctor Fisk, of Salem, Mass.; John Allen, of Cincinnati; G. G. Brewster, of Portsmouth, N. H.; T. B. Hamlin, of Wytheville, Va., B. B. Brown, M. D. of St. Louis, Mo.; John N. Frink, of Portland, Me.; Joseph Taylor, of Maysville, Ky.; Alexander Nelson, M. D. of Albany, N. Y.; Robert Nelson, of Albany, N. Y.; C. W. Grant, of Newburg; Doctor Macklin, of Vicksburg, Miss.; Benjamin Strickland, of Cleveland, Ohio; G. McDonald, M. D. of Macon, Ga.; J. P. Hullihen, of Wheeling, Va.; Wm. A. Ward, of Pittsburg, Pa.; R. Covington Mackall, D. D. S., Baltimore; Robert Arthur, D. D. S., Chambersburg, Pa.

OFFICERS OF THE SOCIETY FOR THE YEARS 1841-42.

H. H. HAYDEN, M. D., *President.*
ELEAZAR PARMLY, M. D., *1st Vice President.*
LEWIS ROPER, M. D., *2d Vice President.*
SOLYMAN BROWN, M. D., *Recording Secretary.*
CHAPIN A. HARRIS, M. D., *Corresponding Secretary.*
ELISHA BAKER, M. D., *Treasurer.*
J. H. FOSTER, M. D., *Librarian.*

Executive Committee.

E. TOWNSEND, E. MAYNARD,
L. S. PARMLY, E. TAYLOR,
P. HOUSTON.

Examining Committee.

H. M. HAYDEN, J. S. GUNNELL,
J. McILHENNEY, C. A. HARRIS,
J. SMITH DODGE.

Publishing Committee.

H. S. BURR, E. BAKER,
S. BROWN, S. M. SHEPHERD,
S. W. PARMLY.

ELEAZAR PARMLY, M. D., was appointed to deliver the opening address at the next annual meeting, and the following gentlemen to deliver dissertations on subjects connected with Dental Theory or Practice, in accordance with a requisition of the by-laws of the Society: E. Baker, E. Townsend, V. Cuylor, H. M. Hayden, and E. Maynard.

J. H. Foster was appointed to prepare a popular essay on the importance of stopping teeth; E. Maynard, on that of the removal of salivary calculus from the teeth; H. H. Hayden, on the diseases of the gums; E. Townsend, on the importance of extracting diseased teeth, which cannot be restored; C. A. Harris, on first dentition.

We also extract from the proceedings of the Society the following, in relation to the establishment of a periodical:

Resolved, That this Society establish a periodical as the organ of its opinions on subjects of dental theory and practice, and for the purpose of advancing the interests of the science and the profession.

Thereupon, Dr. Harris, in the name of his coadjutors, made a formal tender of the American Journal of Dental Science, on conditions, that the present volume shall be completed by the original conductors, and also, that none of the engagements of the publishing committee of the first volume shall be violated by their successors, nor any of their contracts omitted.

This offer having been accepted, and the future plan of the publication determined on, C. A. Harris and Solyman Brown, were elected editors, and the following gentlemen, collaborators for the ensuing year, namely: H. H. Hayden, Eleazar Parmly, E. May-

nard, H. M. Hayden, Elisha Townsend, Vernon Cuylor, Isaac J. Greenwood, G. G. Brewster, Ludolph Parmly, Edward Taylor, C. S. Brewster, Leonard Koecker, Lewis Roper, H. S. Burr, E. Baker, Horatio N. Fenn, Alexander Nelson, B. A. Rodrigues, Dr. Rogers, and Enoch Noyes.

The committee, Drs. E. Parmly, E. Baker, S. Brown, C. A. Harris, and J. Parmly, to whom the duty of reporting on the use of "lithodeon," "mineral paste," and all other substances of which mercury is an ingredient for stopping teeth, reported in substance, that the use of all such articles were hurtful, both to the teeth and every part of the mouth, and that there was no tooth, in which caries in it could be arrested, and the organ rendered serviceable by being filled, in which gold could not be employed. The report was unanimously adopted by the Society.

After a session of three days the Society adjourned to the third Tuesday in July, A. D. 1842, to meet at the TREMONT HOUSE, in BOSTON, at ten o'clock, unless otherwise ordered by the President.

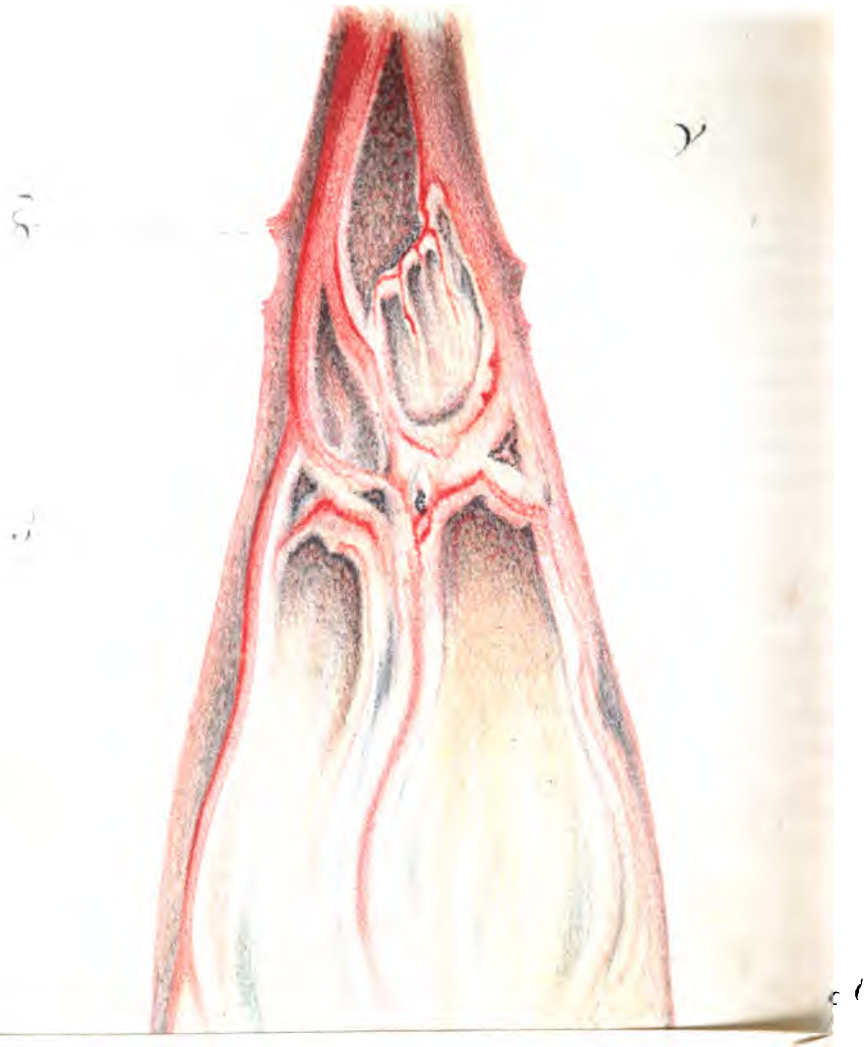
ARTICLE VII.

Letter from MR. C. BROWN, *to the Baltimore Editor.*

HONOURED AND DEAR SIR: *Woolwich, Kent, England.*

THE observation of the erudite and acute reasoner, President Edwards, who, "though dead, yet speaketh," that *most of the great things that have been done in the world, the great revolutions that have been accomplished* in the kingdoms and empires of the earth, have been chiefly owing to the influence and power of *zeal and resolution,* is a proposition, the truth of which, I am persuaded, will, eventually, be most satisfactorily demonstrated, in results worthy the exertions now making by yourself and colleagues, to emancipate our profession from its present degraded condition. And, although, all the benefits that could be wished, may not be achieved immediately, nor, perhaps, in the life-time of those who are now so laudably striving to effect it; still, every member of our body who really feels the elevation of moral character, and the advancement of scientific attainments in the majority of prac-

From a drawing furnished by
Chas Brown Surgeon Dentist Woolwich, England.



titioners, to be a desideratum; or, who consider it in a more comprehensive sense, as involving, in no small degree, the welfare and happiness of community, and some of our dearest interests, as honourable members of society, and the interests of our posterity (especially to such of us who have children coming forward in our practice) must consider their sincere congratulation, and grateful acknowledgments, are due to our brethren of the United States, for their *zeal, and for their resolution,* and will be anxious to encourage and promote, as far as ability may serve, so important an object.

Influenced by this feeling, I, with much pleasure, forward to you the accompanying drawing, with the hope that it will be of some assistance to you in your demonstrations, and may, in some degree, facilitate further inquiries into the physiology of the teeth; and, if thought worthy of lithographing, it may produce a trifling profit, and so made available to the support of "the Journal." The drawing, as you will doubtless perceive, is from a microscopic view of the internal membrane of a superior bicuspis, the history of which I annex. For the accuracy of the delineation, I can avouch, having drawn it myself, (and another which I gave to our esteemed and justly popular fellow practitioner, J. Bell, Esq., F. R. S.) direct from the microscope.

That much honour and satisfaction may be the reward of yourself and fellow-labourers, is the sincere wish of yours, dear sir,

Very respectfully, CHARLES BROWN.

EXPLANATION OF THE PLATE.

The tooth was removed in order to relieve a crowded denture. The patient, a young artillery officer, at the time of its extraction, *was very heated by a hasty run* to my house. He is, also, of *very plethoric habit.*

At the expiration of about six weeks, the tooth was carefully split in a vice, when I had the satisfaction to obtain the very beautiful specimen, from which the drawing is taken. The membrane itself has now lost its fainter colours, but the principal vessel β is still perfect and distinct. By reason of the difficulty of detaching it, the membrane, from the foramen in apex of the fang, is ruptured and imperfect at and above the line γ. The vessels appear to concentrate and terminate at λ, not entering the substance at ε below. The parts marked ζ are novel to me, but they exist in the specimen, and appear to occupy a position similar to the byssus of a bivalve shell-fish.

ARTICLE VIII.

Letter from DR. ISAAC I. GREENWOOD, *to the New York Editor.*

DEAR SIR: *New York, February* 27, 1841.

YOU will excuse the repeated liberties I have taken in addressing you, but seeing, under your signature, in the Journal of Dental Science, page 227, No. 9 and 10, vol. 1, a recommendation of the use of *arsenic* as a cure for the tooth-ache, I am urged, by a sense of duty, and by your endeavours to substantiate the facts of the usefulness of this mineral, when applied to that purpose, to give you my experience in the use of the same for six years past. I have, hitherto, been kept silent by a publication by H. Burdell, M. D., part 1, page 29, upon the "Diseases of the Teeth," wherein he deprecates the use of *arsenic* as a remedy for this evil, and gives the decided preference to *kreosote*. I have waited patiently, until some one more experienced in its virtues and uses as a cure for this evil, should speak its praise, and I am happy it has found its advocate in one I esteem so capable of judging of its curative or injurious effects as thus applied. The evil arising from the use of this mineral, is, in the "modus operandi," or mal-administration of it, as a remedy. The method I have used, I have ever found to produce the effects I desired, and I may say that every case I have had, since I have used it as a remedy, and I commenced with myself, has proved successful.

When a patient applies to me for the cure of tooth-ache, I examine the tooth, and clean out the cavity, endeavouring to make *bare* the nerve, if practicable, with a small instrument. If the nerve bleeds, so much the better. I then wipe out the cavity with raw cotton, steeped in essence of peppermint, laudanum, or alcohol. After which, I take raw cotton of sufficient size to stop up three-fourths of the cavity of the tooth. I dip the point into laudanum, so as somewhat to saturate the cotton with it, that the *mixture* I shall mention below may adhere to it. I then take up upon the point of it, by *touching the mixture*, about the size of a large *pin's head*, and in *no instance* do I ever *use more, however large the cavity in the tooth ;* but sometimes a *smaller* quantity. This I place in the cavity of the tooth, immediately in contact, if

I can, with the *nerve,* and stop up the cavity with mastic, composed of Venice turpentine, heated, and mixed with calcined plaster of Paris and chalk. Feuchtwanger's Prussian cement for the teeth, *will answer,* placed upon the raw cotton in the tooth, and sometimes mixed up with it so as to fill up the cavity, charging the patient to take it out in *three* days *exactly,* and in no wise to masticate on that side during the time. If a patient will come to me, which they generally will do, I take it out for them, which I prefer to do, and wash out the cavity with alcohol. The tooth is by this time *cured;* but for fear there may remain an ichorous fluid oozing still from the dental canal, I leave it for *three days longer,* when the organ is *fully prepared and ready* for stopping, either with *gold or otherwise.* The symptoms of the efficacy of the cure are these, viz: the pain, *after* commencing, will endure for three or four hours, sometimes more, according to the *irritability* of the patient. After the acute pains have passed away, a soreness will continue for some time, accompanied by a looseness of the organ, occasioned by the inflamed state of the periosteum. This gradually dies away, and by the second or third day, *in almost every case, disappears.* If, *when* the raw cotton and the mastic are removed on the third day, the patient takes *cold water* in the mouth, and *no pain* arises from it, the *cause* is removed. This is *the proof in all cases.* I have been thus prolix, in order that you may be supported by one who has *tested* its efficacy for years with success, and, indeed, I make use of no other remedy.

Mixture.—To be placed in *an ounce glass vial,* with *glass stopper.*

℞ Three parts arsenic,
One, do. acetate morphine,
Mix.

With sentiments of esteem, I am, &c.

ISAAC I. GREENWOOD, 71 *Warren-st.*

* * *

Note.—From the above description of the pain, which follows the application of arsenic and morphine, I should substitute kreosote in place of the morphine, inasmuch as the mixture which I have recommended in a former number, is found to give very little, if any uneasiness to the patient.—*New York Ed.*

ARTCLE IX.

Remarkable effect upon the Human Gums, produced by absorption of Lead. By HENRY BURTON, M. D. physician to St. Thomas' hospital.

THE only approach to the observation now to be stated, is a notice by Dr. Christison, and Dr. A. T. Thomson, that in persons who have taken lead in quantity, salivation is apt to occur, and the saliva is of a *bluish colour.* Dr. Burton, from observations made since 1834, on persons who had been exposed to the action of lead in the course of their usual avocations, and of those also who had swallowed the acetate of lead medicinally, is of opinion, that salivation in the ordinary sense of the term, does not occur in one case out of thirty-six cases of lead colic, the number examined in his wards; nor in one case out of fourteen cases of pulmonary disease, which were treated by him with acetate of lead, but in the total number of fifty patients, who were examined whilst under the influence of lead, a peculiar discoloration was observed on their gums, which he could not discern on the gums of several hundred patients who were not under its influence.

The edges of the gums attached to the necks of two or more teeth of either jaw, were distinctly bordered by a *narrow leaden-blue* line, about the twentieth of an inch in width, whilst the substance apparently retained its ordinary colour and condition. There was no invariable tumefaction, softening, or tenderness about them—nor fœtor of the breath—while the quantity and colour of the saliva preserved the same appearance after as before the appearance of the blue line.

This appearance has no resemblance to the effects caused by mercury. On the contrary, the blue line was obliterated on patients with lead colic, to whom calomel was given in sufficient quantity to affect the system.

While the discoloration of the gums is a very constant and *early* occurrence from the effects of lead, Dr. Burton is of opinion that salivation and turgidity of the gums are rare events, and not characteristic of its influence. The discoloration is also permanent—requiring a length of time to remove it—and in several instances, it continued and was manifest after death.

As this change takes place either from large doses of lead, taken internally, or its action on workers in it, Dr. Burton suggests that a knowledge of its cause may be ussefully employed in leading to an early treatment of the patient.—*Benjamin Travers, in Medico-Chirurgical Transactions,* vol. xxiii. T. R. B.

Am. Jour. of Med. Sciences.]

ARTICLE X.

Letter from J. E. SNODGRASS, M. D. *to the Baltimore Editor.*

DEAR DOCTOR:— *Baltimore, June* 2, 1841.

YOU recollect that when I last had the pleasure of seeing you, our conversation turned upon dental irritation as concerned in the production of fatal diseases. I happened to allude to the painful and sudden death of my father as an example of the powerful, yet hidden influences of dental affections, as a case in point. Your request, that I would report the case, I now attempt to comply with, although I confess I do so with some reluctance. In the first place, because it is a painful reminiscence; and, secondly, not having been at all *indoctrinated* at the time of its occurrence, I fear that the partial report I shall make, will prevent the case from being so valuable to you as you were disposed to consider it. In order to render facts relating to any branch of remedial science, fully useful, they should, if possible, be reported not only honestly, but professionally. Besides, one can hardly be expected to bear facts in memory for a period of ten years, (which have elapsed since the occurrence under notice,) so as to give an authentic account of them. However, there could be no circumstances of life, so likely to make an indelible impression, as that of a father called, with a few hours warning, to a death by the most horrific of all diseases—*phrenitis.* I will state the essential facts, then, as briefly as possible. At the time of his death his age was about fifty-two. His general health had been good, with the exception of occasional attacks of urinary irritation accompanied with sedimentitious secretions and difficulty of retention. This affection was ascribed to the influences of a gouty diathesis, which he left as an unwelcome legacy to his only son. Some months before his death he contracted a severe cold, which resulted in a protracted indisposition, the nature of which I do not recollect. When able to leave his room and resume the supervision of his business, he imprudently walked out after a rain, in a pair of very thin soaled slippers; and getting his feet wet in that way, a relapse was the result. The relapse was accompanied by a general odontalgic affection, in which a number of his teeth participated, (they being, generally, very much decayed and fractured, from a neglect far too general, in retired districts especially,) to the production of much nervousness of temper and feebleness. The inflammatory action increased gradually, until the entire inferior maxilary bone, (of the left side, I think,) appeared to have become involved in it. It had, now, arrived at that state which is styled *jaw-ache,* in common parlance. A few days previous to his death the inflammatory action reached the ear, and induced what he described as a deep-seated benumbed pain, accompanied by a disagreeable swimming in the head, and drumming in the ears. Yet he was, at no time, bed-fast on account of his indisposition. On the evening before his death we supped together as usual, he conversing, with ordinary freedom. About nine o'clock at night I was awakened, and informed that he was "crazy." I hastened to his chamber, only to discover him completely frantic. Delirium, which is commonly an early companion of phrenitis, had already supervened, and displayed its presence by the most terrific symptoms. His eyes were turgid, his face deeply flushed—his countenance wild and maniacal. His vision and sense of hearing appeared entirely gone, so that he did not seem to recognize me. Nor did he respond to my queries pronounced, with my mouth placed over the ear, in the loudest tones. Incoherent mutterings were all that he uttered, while he tossed to and fro with a muscular strength which required the assistance of the most athletic man-servant to keep him any thing like quiet. He continued in this state for several hours, and then sank into a somewhat soporific state, characterized by what I have since recognized as coma. In this comatose state he died about ten o'clock the following morning, despite of blood-letting and other active remedies applied as promptly as possible.

I have thus been particular in my detail of the symptoms that you may recognize in the case, the presence of the disease to which I have already ascribed my father's sudden death. I have not the least doubt, that odontalgia was the indirect cause of the suddenness of his mortality. The ear-ache, doubtless, resulted *sympathetically* from the tooth-ache; while the phrenitis was the *finale*—taking place under the control of an insiduous inflammation, whose progress, perhaps, his medical attendant little suspected, if at all. If there could be any difficulty in tracing the first steps of the inflammatory action, there surely could be none in accounting for the appearance of phrenitis, after the appendages of the brain became involved ever so slightly—for medical writers mention cases the result of phlegmonous swellings about the scalp, and of small-pox, and erysipelas of the head and face. The main questions to be determined, then, are the modes in which the inflammation originally seated in the teeth, was conducted to the auditory apparatus, and, next to the brain and its coverings. Now, to say nothing about the sympathy which parts of the animal economy less delicately organized, manifest for each other—it is clear to the most superficial medical observer, that the muscular tendinous, and vascular connections between the jaw and the ear, and between the ear and the brain, are exceedingly intimate. But, if we had any doubts on this score, the *nervous* connections between these parts need merely be alluded to, in order to render the inference clear, that phrenitis and sudden death, were the results of a simple odontalgia. The nerves distributed to the teeth and ear, have a common origin in branches of the *fifth pair*—while the immediate nervous relation of the auditory apparatus, with the cerebral mass, and its great covering, the dura mater, is strikingly apparent.

I do not deem any further comments pertinent from me; for, if the influences of simple odontalgia *did* produce the catastrophe I have ascribed to it, the case will speak for itself, in tones which ought to awaken the community to a sense of the perils incurred by what they are in the habit of styling "a mere tooth-ache." But I cannot suffer the present opportunity to pass, as much as I am hurried, without thanking you and your colleagues, (the worth of the teachings of one of whom I have experienced) in the name of humanity for the good you are effecting through your lectures in the COLLEGE OF DENTISTRY. Your recent work has my fullest approbation—although calculated to make me feel quite ignorant of an art I am sometimes called upon to practise, and used to be *compelled* to practise when resident in the country. It contains a great mass of valuable statistics, and bears the impress of theories built upon the true Baconian basis.

If I were disposed to be jealous, I would say that the members of your art are making daring inroads upon the provinces of medicine and surgery. Whether the more selfish and narrow-souled of my profession are pleased, or displeased, is not the main matter; for, I apprehend, the more enlightened classes of the people have discovered, that what is our loss, is their gain. The time is coming when the *forceps* will be talked of as *the* cure for many a disease, whose eradication was supposed, hitherto, to depend upon the continuance of the "opium trade." I have no doubt in the world that many a case of *tic douloureux*, which has consumed much opium, and expended hundreds of hard-earned dollars, (and been subjected to a painful operation for division of nerves at last) might have been forever suppressed by the simple operation of lifting a useless tooth from its fœtid repose. Many of the nervous headaches we hear of, I am inclined to believe—nay, I know it, are referable to dental irritation, and that they might be greatly alleviated, if not banished wholly, by a few sittings in the dental chair.

I have only one concluding remark to make. It is that, I hope the time is coming when the march of science in your branch of the profession, shall have drawn the line of demarcation between quackery and true merit, so that the people at large may be able to tell, at the first glance, the sheep from the *goats*. This, nothing will so speedily effect as a diffusion of scientific knowledge among the masses. Nothing enables a non-professional man to discriminate between the miserable pretender and the truly indoctrinated, like an outline-view of the structure and diseases of the human frame, and the remedial means applicable to their cure. It may seem paradoxical in me, but I do believe, that quackery would prevail far less, if the people at large, knew more of the secrets of the profession of medicine.

Very truly yours, J. E. SNODGRASS.

AMERICAN JOURNAL AND LIBRARY OF DENTAL SCIENCE.

Change in the New York Editorship.—With the transfer of our Journal from the hands of the original proprietors, to the American Society of Dental Surgeons, there has been a change, as our readers will perceive, in the New York editorship. Dr. E. Parmly, to whose zeal and ability they have been so much indebted, declining on account of his arduous professional, and numerous other duties, to be a candidate for the editorship, Dr. Solyman Brown was chosen by the society to supply his place.

We regret as much as any of our readers can, the loss of Dr. Parmly's valuable services, but we are happy to know that his place has been ably filled, and that his zeal in the cause of the profession is undiminished,—that his steady and efficient aid will be given to the Journal as cheerfully, though perhaps less publicly than heretofore.

In retiring from the editorship of the Journal, Dr. Parmly takes with him our grateful remembrance, and our best wishes. May he live to see the cause which lays so near his heart, prosper far beyond his most sanguine expectations; and when he has passed away, may the dental profession, rescued from degradation, and elevated to honour and acknowledged importance, be his enduring monument.—*Balt. Ed.*

* * *

Medical Almanac, for 1842.—Gentlemen preparing articles for the next volume, the 4th in the series, are requested to transmit them to the address of the editor of this Journal, as soon as it will suit their convenience. Medical statistics, in the United States and the British American Provinces, are especially desired—together with accounts of all new medical associations, the names of their officers, and all other useful information concerning them. Full and accurate accounts of medical schools, hospitals, infirmaries and dispensaries, as in past years, are requested from authentic sources. Any communications calculated to make this annual increasingly useful to the profession throughout the whole country, will be gratefully acknowledged by the editor.—*Boston Medical and Surgical Journal.*

Bibliographical Notices.

Researches on the Development, Structure and Diseases of the Teeth. By ALEXANDER NASMYTH, F. L. S., F. G. S., Member of the Royal College of Surgeons, Fellow of the Royal Medical and Chirurgical Society. LONDON, 1839, pp. 165, 8vo.

THE lengthy and very able article copied into our January and February numbers, from the "*Boston Medical and Surgical Journal,*" "on the Development and Structure of the Teeth," supersedes the necessity of a review from us, of the above work. We cannot, however, let the opportunity pass, without expressing the high gratification which we derived from reading it. From beginning to end it is replete with interesting and valuable information, comprising the results of the researches on the development and structure of the teeth of nearly every writer of any eminence on this branch of odontology.

The volume before us is only an historical introduction to the main work. The remainder has not yet been published, but judging from the learning and research exhibited in this, we anticipate a treatise of very great excellence, and wait with no little impatience its appearance.

Mr. Nasmyth is a man of no ordinary ability, and from the attention with which he has evidently investigated the subject of his treatise, is eminently qualified to do justice to it.

"The teeth," says Mr. Nasmyth, "may be regarded in the first place as the armoury of the mouth; and in the second, as the instruments by which the process of assimilation is commenced. They assist in seizing, dividing, tearing, and masticating the substances which the diversified surface of the earth, the fathomless depths of the ocean, and the boundless expanse of atmosphere, afford in infinite variety as materials for building up the physical frame-work of animated existence." Again, he remarks, "in the sequel to the present work it will be shown that, besides the general conformation and external appearance of the teeth, another distinctive peculiarity by which the Almighty has characterized the different members of the animal kingdom, exists in their beautiful internal, minute, and hitherto hidden organization, which further demonstrates in a most striking manner the harmony of all created existence."

Mr. Nasmyth promises that the next part of his work shall contain an account of the development and structure of the teeth. The present volume does not inform us what his views are upon these subjects, except that he does not believe in the tubular doctrine as maintained by Retzius and others. The opinion, therefore, that has been advanced, that, when a tooth has been filled, the "mouths of these vessels" deposite a bony layer around the filling, is objected to by him as being opposed to any known facts; and besides, he regards the "existence of a system of opened mouthed vessels ready to pour out fluid of any kind to a greater or less extent," as incompatible with the character of a tooth and the offices it has to execute. The admission of this, would at once be, the endowing of dental bone with recuperative powers, which it is well known it does not possess, and if we deny it, we must reject the doctrine that the decay of the organs is the result of an increased action of their vessels. For, if they be not possessed with restorative powers, it seems no more than fair to presume that they are not endowed with powers whereby they can effect their own destruction. The operations of the economy of other parts of the animal organization, would, at any rate, seem to justify this conclusion, and which, when taken in connection with the fact, as has been shown, time after time, that inflammation of the bony structure of the teeth is not necessary to caries in them, the correctness of the assumption hardly admits of doubt.

But to return—"In man," remarks Mr. N. "the mouth is as important as in the lower animals, for the performance of functions which are common to both, and has also other offices corresponding to the intellectual qualities, with which he is exclusively endowed. With him, too, it is the porch of assimilation, but with him alone it serves for the expression of mental operations—the elevated characteristic of his race. He not only performs mastication by its means, but accomplishes with its aid the emission of articulate sounds; communicates his ideas to his fellow-men, receiving information conveyed in the same manner in return; and thus are means furnished for the infinite progress and improvement of mankind. By the endowment of speech man is enabled to command and direct the beings around him, and to bring to bear on a single point the will of a whole race. The teeth are of essential importance in the exercise of this faculty, for the eloquence of the statesman would be powerless, and the force of his arguments unavailing, if they were deprived of the sonorous utterance imparted to them by these organs, without which, too, the warrior's exhortation and command must lose their electrifying influence."

Again, he says, "I have endeavoured to conduct my investigations on a scale which I conceived commensurate with the importance of the subject; and in detailing the results which I have arrived at, I shall give as careful a description as possible of the nature of the experiments, dissections, or observations which lead me to them. The substance of what I have to offer will go to prove, I think, a greater degree of simplicity and uniformity, than has hitherto been suspected in the organization of these structures."

Although the formation, structure and diseases of the teeth have long engaged the attention of men of learning and high physiological attainments, there yet remains much to be learned; and it is gratifying to perceive that researches into this department of science are still being made, both in Europe and America, and that, too, by men, and with a zeal that promises the most useful and valuable results.

The microscopic examinations of the teeth by Retzius, though they have not resulted in a satisfactory explanation of the manner in which the calcareous molecules in dental bone are arranged, have certainly added much to the stock of information that before existed on the subject, and Mr. Nasmyth has done well in presenting the English reader with a translation of his papers, containing an account of them.

Besides giving a view of the researches of modern writers on odontology, the progress of the science from the earliest periods of which any authentic account of it has reached us, is rapidly and at the same time very accurately traced by the accomplished author of the work under notice. Commencing with the allusions made by *Herodotus* to the manner in which medicine was practised in ancient Egypt, when its practitioners were divided into classes, each restricted to the treatment of diseases of the particular part of the body assigned it, some taking charge of those of the eyes, others those of the teeth, &c. &c. he says,

> "Of the views entertained of the physiology and pathology of these organs in Greece, before the time of *Hippocrates,* we know but little, except that they are embodied in the works of the latter. *Homer* calls the teeth, 'little barriers opposed by nature to the unruliness of the tongue, and to the abuse of speech.'"

The crude and imperfect notions of *Hippocrates* in regard to the origin and formation of the teeth is next noticed. The opinions of *Aristotle, Aretæus, Galen, Ætius,* and *Vesalius,* are then briefly alluded to, the last of whom, though styled, and very justly so, the restorer of anatomy, does not seem to have carried his anatomical researches to the dental organism. The views of *Eustachius,* the first who seems to have studied the teeth with much care or attention, are remarked upon somewhat more at length. Passing this author, *Ambrose Paré,* is the next that claims his attention, and from whose celebrated work, among other things he quotes the following. "The teeth differ from the other bones, because they have action while they chew the meat, because being lost they may be generated, and for that they grow as long as the party lives; for otherwise, by the continual use of chawing, they would be worn and wasted away by one another." This belief is entertained by a writer of little less celebrity and of a much later date. We allude to that distinguished physiologist *Richerand.* He asserts that the teeth waste by friction and grow and repair themselves. Among the older writers, many very singular and absurd notions were entertained in regard to the teeth. Gibson, an anatomist of the seventeenth century, observing that the temporary teeth had no roots when they were shed, supposed they remained in the sockets, and to quote his own words, "which being like seeds for the new ones, by degrees grow up above the gums, to supply the place of that which was fallen off." Numerous other equally erroneous and fantastic ideas pertaining to the manner of the formation of the teeth, and to their diseases and treatment, prevailed at and even subsequent to this time.

Cotemporary with the author last mentioned, and others equally uninformed on the subject of the teeth was *Leeuwenhoek,* who, as is seen by his publications in the *Philosophical Transactions,* for 1687, seems to have studied it with much attention, and, it is a matter of surprise that, the promulgation of the result of his numerous and highly interesting researches did not attract at the time more notice than they seem to have done.

Returning however, to the writings of that celebrated French surgeon, *Ambrose Paré;* we will quote from the work before us, one passage on the insertion of artificial teeth, and though the method described by him of doing it was long ago abandoned by all well informed practiciens, it is within the recollection of many, not yet gray in the profession, when it was followed by not a few engaged in the calling of the dentist. "Teeth," says he, "artificially made of bone or ivory may be put in the place of those that are wanting; and they must be joined one fast unto another, and also so fastened unto the natural teeth adjoining that are whole; and this must chiefly be done with a thread of gold or silver, or, for want of either, with a common thread of silk or flax, as it is declared at large by Hippocrates, sect. ii. *lib. de art. sent.* xv."

A brief expose of some of the views of *Scaliger, Kerkring, Malpighi, Leeuwenhoek, Duverney* and *Winslow,* next follows. Continuing the historical account of the progress of the science of odontology, the author, after noticing the writings of *Bertin, Herissant, Bourdet,* and *Jourdain,* on the subject, arrives at the work of the famous English anatomist and surgeon, *John Hunter,* on the teeth. This treatise is noticed more at length, and in doing which, Mr. Nasmyth takes occasion to point out the great similarity that exists between the opinions of its author and his distinguished predecessor, Ambrose Pare. A comparison of the following passages are instituted.

> "Pare, in the 30th chapter of his 10th book, recommends a hot iron, or cotton dipped in oil of vitriol to be applied in case of tooth-ache, 'in order to burn the nerve which is inserted into their roots.' This does not much differ from Mr. Hunter's treatment, as we learn from the following passage: 'The nerve may be burned, that this may have the desired effect, it must be done to the very point of the fang.' Again, 'Either of the concentrated acids, such as those of vitriol, nitre, or sea-salt, introduced as far as possible, is capable of destroying its soft parts, which most probably are the seat of pain.'"

A comparison of a number of other passages from the works of these two eminent men is made by Mr. N. which, it is not necessary for us to copy.

Continuing the subject, condensed notices and brief extracts from the writings of *Bichat, Blandin,* Blake, Fox, Bell, Koecker, Jobson, and Waite, interspersed with quotations from some of the works previously presented to the reader, succeed to the historical sketch of Hunter's treatise on the natural history and diseases of the teeth.

Having rapidly traced the progress of the science thus far, the works of *Baron Cuvier, Serres, F. Cuvier, Rousseau, Weber, Tenon, Purkinje,* and *Müller,* are the next that engage the consideration of the author, and are passed over less hastily than the preceding ones. Ariving at this point in his narrative, the researches of Professor *Retzius,* of Stockholm, next receive his attention, and to these a large portion of his work is devoted.

We should be glad, had we time, to give a more extended notice of this highly interesting work; of its value however, the reader will be able to form some idea from what we have already said, and as it is presumed that every member of the profession will soon endeavour to possess it, a more elaborate description, is perhaps unnecessary.—*Balt. Ed.*

A Practical Treatise on the Human Teeth, showing the causes of their Destruction, and the means of their Preservation. By WILLIAM ROBERTSON, with plates. LONDON, HAYWARD & MOORE, 1839, pp. 205, 8vo.

THE unphilosophical and erroneous doctrine, that caries of the teeth is the result of inflammation of their bony structure, is, we are gratified to learn by the above and other European publications on the teeth, not universally held by our professional brethren on the other side of the water. Its advocates, we believe, are becoming less numerous every day, and opposed as it is to every fact connected with the disease, it is somewhat remarkable that any one in the daily habit of observing it in its different stages could have supposed it to proceed from this cause. We call the doctrine unphilosophical and erroneous, because it has been shown, and that too, by more than one, and by facts that cannot be disproved, that caries of the teeth is produced by other causes than this, and if they are capable of giving rise to the disease, we do not conceive it the part of sound philosophy to ascribe its occurrence to another, the competency of which to orginate it, cannot be shown by any other evidence than mere hypothetical reasoning.

The discovery of the vascularity of the teeth, while it, on the one hand, may be said to have assisted to a more correct explanation of the phenomena of some of the diseases of these organs than had previously existed, it on the other, certainly gave rise to much error of opinion in regard to those of others. For, no sooner was the doctrine promulgated that dental bone was identical with that in other parts, than an analogy was at once supposed to exist between the maladies of the teeth and those of other osseous structures. But to have been consistent, those who maintained these views, should in the treatment of the diseases of the one, have applied the same remedies, that were recommended for those of the other, for, if their diseases be alike, their remedial indications would also be the same. But that disease of the teeth which is designated by the term caries, and this is the one upon which Mr. Robertson principally treats, bears not the slightest analogy to the disease that is called by that name in other bone; it does not possess any of its characteristics, is not dependent upon the same cause, nor is it susceptible of cure by the same remedies. It is not however, our purpose to enter upon a discussion of this subject on the present occasion, we shall therefore, at once proceed to notice the work now under consideration; and in the first place, having in what we have already said, intimated the prominent doctrine set forth in it, would remark, that, while with its author in this, we most heartily concur, we regret that he has passed unnoticed those by whom it had been before promulgated. Is it possible that he was not aware that the opinions which he has advanced in regard to the causes that produce dental caries, had been previously given, and that too, by more writers than one! if so, we can only say that he should have been more thoroughly read on the subject on which he has treated, before having himself become an author on it. We would however, notwithstanding, do him the justice to say, and we do this the more readily, because we are for the most part pleased with his work, that we do not think he was aware of the fact to which we have here alluded. From the spirit of candour, with which he seems to treat the subject, we believe that, had he been conversant with the works of those by whom the doctrine maintained by himself, had been previously advocated, he would not have assumed the credit of having originated it.

But having said thus much, we will mention from among English and American writers on odontology, the names of a few, by whom the doctrine set forth by Mr. Robertson, had been previously promulgated and we will commence with that of Dr. Samuel L. Mitchell, of New York, whose views upon this, among other subjects, are contained in a letter addressed to Thomas Charles Hope, M. D. &c. adjunct professor of chemistry in the University of Edinburg; dated October 10th, 1796, and subsequently in 1805, published in the New York Medical Repository.

In the foregoing paper is shown by actual experiments, that an acid is formed in the mouth, and supposed to be the result of a chemical decomposition of lurking particles of food and other extraneous matter about the teeth, and that it is by the union of this with their calcareous phosphate that their decay is effected.

In a memoir published in the Medical Repository, for 1813, Professor H. H. Hayden, dental surgeon of Baltimore, thus remarks:

> "I shall in the next place endeavour not only to prove my position as it respects the glands, but to point out and identify what, at least in my opinion, constitutes the universal cause of the decay of the human teeth." * * * * * * * *
>
> "Therefore I feel no hesitation in saying that the decay of the human teeth is occasioned almost universally by an acrid, or otherwise morbid secretion from the mouth and gums."

But the doctrine that the decay of the human teeth is occasioned by the action of external chemical agents was promulgated more directly to the profession by Doctor Eleazar Parmly, and by his brother Doctor L. S. Parmly, about twenty years ago, whose views as published in a treatise on the teeth, by each, were at the time noticed in several European Medical Journals. In fact, the first edition of the work of the former was published in London where the author at that time resided. From this we quote the following:

> "From my own observations, I am induced to believe that caries is universally caused by the action of external agents, and therefore cleanliness, after the proper offices of the dentist are performed, is the only guard against it, but some teeth from their being of less dense structure," a circumstance which Mr. Robertson seems not to have taken into consideration, "are less capable of resisting the action of decomposing matter."*
>
> Doctor L. S. Parmly says, "by a chemical action of those relics of food, which accidentally lodge between them, (the teeth,) a deleterious change takes place, constituting an active poison, which corrodes their structure."†

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* An Essay on the Disorders and Treatment of the Teeth.

† Lectures on the Natural History and Management of the Teeth.

More recently, in 1829, the same doctrine was mantained by J. Patterson Clark, A. M. dentist, of London, in a treatise entitled, "a new system of treating the human teeth," as may be seen by the following quotation.

"When indentation, or such like inequality occurs on the surface of the teeth, the juices of the mouth there become stagnant; their properties change, and they exert a pernicious influence, aided by the putrifying particles of animal and vegetable substances which likewise necessarily lodge there."

Mr. Clark adduces many facts to prove that decay of the teeth is caused by the presence of vitiated secretions of the mouth and decomposed particles of food. We could refer to other authors who hold the same views in regard to this subject, but the opinions we have already quoted suffices our purpose.

Mr. Robertson however, has treated the subject at greater length than any preceding writer, and we must do him the credit, to say that he has maintained the position which he has assumed in regard to it, with great ability—having shown by arguments and facts, that cannot, in our opinion, be successfully controverted, that the decay of the teeth is occasioned in no other way than by the action of external corrosive agents. The clear and lucid manner in which he has set forth this doctrine, and the conclusive proofs he adduces in its support, cannot fail to carry conviction of its truth to the minds of all who read his book, and though intended rather for the general reader, than the dental practitioner, the latter should by all means possess it. It contains much valuable information. On the pathology of dental caries, we regard it as a very good work and can therefore, without hesitation commend it to the profession. The author has unquestionably paid much attention to that disease, and what he says of it, seems more the result of personal observation and experience, than opinions formed from other writers. In fact, the only works with which he appears to be at all familiar, are those of Hunter, Fox, and Bell, and the doctrine set forth in these in regard to the decay of the teeth he proves to be erroneous.

From his introductory remarks we make the following quotations. "It may be safely asserted, that none of the organs of the human body are so often the subjects of disease as the teeth; none, the disease of which are so little understood, and yet, when rightly comprehended, none, more completely under individual control."

This opinion is in part correct, but not wholly so. The teeth beyond question are more subject to disease than any of the other parts of the body, and can with greater certainty be controlled; but, that they are less understood is so far from being the fact that they are probably much better.

Alluding to Messrs. Fox and Bell, he says, "each of these has promulgated a theory on the nature and origin of decay of the teeth, and both with the professed object of supplying the deficiency of Mr. Hunter." In noticing the theories of these scientific authors, he a little further on thus remarks, "The mistaken notions which have been advanced upon this subject, it is of the more importance to correct, because they erroneously suppose the proximate cause of decay to be inflammation of the internal substance of the tooth, commencing according to the theory of Mr. Bell, upon the surface of the bone, within the enamel; and, according to the doctrine of Mr. Fox, originating in the internal membrane; and consequently, the primary seat of the disease being in the interior of the tooth, it does not discover itself externally until it has made considerable ravages in the internal substance of the organ; an error of the greater importance because it leads the public in general, to whom the influence of the opinions of eminent men naturally extends, to neglect the teeth during the first stages of decay when its progress might be arrested, and to withhold their attention until acute suffering and irremediable mischief have been produced."

In the second chapter of his work the theories of these two gentlemen are examined more at length. The erroneous views entertained by Mr. Fox of the cause of dental caries is attributed by Mr. Robertson to his having "compared the teeth with other bones," and to the opinion held by him that a "similarity of structure and organization existed in both;" and in support of this assertion quotes from his treatise on the teeth, the following passage.

"That this is the proximate cause of caries" says Mr. Fox, "appears to be highly probable, by remarking that a caries of other bones is caused by a separation of those membranes which cover them. Thus a separation of the periosteum will cause a death of the tibia or that of the pericranium a caries of some part of the bones of the head."* "This opinion," says our author, "he considers, is confirmed by comparing the symptoms which accompany inflammation in a bone with those which are occasionally felt by persons in their teeth, previously to any appearance of caries."

Arguing from these premises, Mr. Robertson contends, and very justly so too, that tooth-ache, a never failing consequence of inflammation of the lining membrane of a tooth, would always precede caries, which common experience and daily observation proves to be not the fact; on the contrary, that inflammation of this membrane and pain, is rather the result of previous decay, and hence the danger of neglecting the teeth until admonished by pain, that disease is committing its ravages upon them; when, as it not unfrequently happens, the devastations committed by it are such, as to render the skill of the dental surgeon inadequate to the reparation of the injury.

Mr. Robertson furthermore contends that were the theories of Mr. Fox and Mr. Bell true, all the teeth would be equally subject to caries, which according to these gentlemen's own showing is not the fact.

Agreeably to Mr. Bell's theory, the surface of bone most remote from the internal membrane, he maintains, would be the part most liable to be first attacked by the disease, when, in reality the very reverse is true.

In the third chapter the author adduces proofs in support of the doctrine that the decay of the teeth is occasioned by the action of chemical agents, these, our limits will not permit us to notice. We will, however, quote the first paragraph, the views of the author being therein set forth.

"Upon examination," says he, "it will be found that there are fissures formed in the enamel of the teeth, in consequence of the irregular distribution of that substance upon their surfaces; and that there are also interstices produced by the crowded position of the teeth, and the irregularity of their shape: in these situations particles of food are retained, which undergo a process of decomposition and acquire the property of corroding, disuniting, and thereby destroying the earthy and animal substance of which the teeth are composed. That this is the cause of the destruction of the teeth, commonly called 'caries,' and that it is not the result of inflammation, either in the membrane or the bone of the tooth, will appear obvious from facts which will be produced, and which I have daily witnessed during a long course of practice."

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* Inflammation and separation of the lining membrane of a tooth may cause the death of the organ, and still not give rise to caries in it—a distinction which Mr. Fox, in this place, seems to have overlooked.

The only circumstance that he seems to have noticed as constituting a difference in the liability of different teeth to decay, is that which is found in their shape; but there is another, and that is the density of the organs. In the ratio as they are hard or soft is their liability to be acted upon by external corrosive agents increased or diminished; and it is worthy of remark, that dense teeth have fewer lodgments for extraneous matter than those that are soft. Teeth that are hard, and well arranged are less liable to be attacked with caries, than those that are soft and form an irregular arch. Our views however, having been given somewhat at length in another place,* it is unnecessary to repeat them here.

The more effectually to establish the theory of the decay of the teeth which he advocates, he denies the vascularity of the organs. This we conceive was unnecessary, and had he investigated their structure with as much attention as he seems to have done that of their diseases, he would hardly have fallen into this error, we call it an error because the contrary has been satisfactorily proven, anatomical research has long since placed this matter at rest. We have in our possession at this time, two upper incisor teeth, which were presented to us by Mr. F. H. Clark, surgeon dentist of this city, taken from a person who had died of asphyxia,† that are tinged with red. We have also two thin slices of bone taken from the root of an inferior molaris, extracted from the mouth of a boy about thirteen years of age, in each of which, by the aid of a microscope magnifying 675, a vessel injected with red blood can be distinctly seen. These, we exhibited to the class of the Baltimore College of Dental Surgery, but a few months since, and they have also been examined by several medical gentlemen.

But notwithstanding the erroneous views which Mr. Robertson entertains on some of the subjects upon which he treats, his opinions are, as we have before said, for the most part correct. He has one very excellent chapter on the bad effects that result from the retention of teeth, so much diseased that they cannot be restored, in the mouth. We wish it could be read by every one. Succeeding to this, he has one on the loss of the teeth from tartar and from inflammation of the dental periostum.

The work being designed principally for the general reader, the author enters but little into practical detail.—*Balt. Ed.*

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* See the Dental Art, a practical treatise on Dental Surgery.

† See Professor Hayden's article on this subject in the 9th and 10th numbers of this Journal, vol. 1, p. 212.

Popular Treatise on the Structure, Diseases, and Treatment of the Human Teeth, with an illustration of the present state of Dental Mechanism. By J. L. Murphy; London; Whittaker & Co. 1837, pp. 203, 12mo.

Information concerning the means necessary for the preservation of health cannot be too widely disseminated; but in the reception of opinions on a subject involving so much of human comfort and happiness, we should be careful to be influenced by such only as come from accredited sources. We should endeavour, therefore, to discriminate between those that are based upon hypothesis, and those that are founded on well established facts or are the result of long, careful and accurate observation and experience. The *ipse dixit* of an individual concerning that with which, we have no evidence that he himself is thoroughly acquainted, should not be too hastily received, lest by a too easy credulity, we be lead into error, and suffer, perhaps, in consequence, irreparable injury. It is not every one who assumes to teach, that is competent to the task, or is himself well instructed.

The volume before us, is handsomely got up; the language is plain, and sufficiently abundant to a ready and full comprehension of the views of the author. The whole work is comprised in seven chapters. The relationship subsisting between the dental apparatus and other parts of the body are treated on in the first, and from which, is deduced the importance of the art of the surgeon dentist. In this chapter also, are advanced some very cogent reasons, for a general "cultivation of the knowledge of the teeth." With these, all who have the care of children should be acquainted, and were they to properly feel their force, much of the suffering and disease that results from inattention to these organs, would, we are persuaded, be avoided.

The principles of practice which Mr. Murphy lays down and recommends are not in every particular, such as are recognized by scientific and experienced practitioners of dental surgery. The empirical practice of filling teeth with "*metallic cements,*"—the principle ingredient of which is crude mercury, we regret to say, he recommends in many cases. The deleterious effects of these articles upon the teeth and mouth generally, are too well known in this country to need comment. It may be they have not had as much experience in England with them as here. We hope they have not, and that they never will have, for, of all the articles, of which we have any knowledge, that has ever been employed for stopping teeth, this is decidedly the most objectionable; and we want no better evidence of a man's ignorance of this nice and difficult operation, than for him to use, or recommend the use of this poisonous compound. Tin or even lead is incomparably better.

We are inclined to believe, that Mr. Murphy has had little practical experience in the treatment of the diseases of the teeth, from the fact, that he supposes any one can go through with the manipulations pertaining to that, of at least, many of their maladies. With a view to convince his readers of this, he says, "Every art is calculated in some degree to be practised by all, and each has its simpler operations, the knowledge of which, serving as a correct guide to their performance, cannot but be beneficial." With most of the arts, this may be true, but not with that of the treatment of the diseases of the teeth. The means necessary to their prevention, can, and should be thoroughly understood, and regularly employed by all. None, except such as have been thoroughly instructed and long exercised in the treatment of the diseases of these organs are capable of arresting them.—*Balt. Ed.*

Recent Publications.

Odontography; or, a treatise on the Comparative Anatomy of the Teeth, the Physiological Relations, Mode of Development, and Microscopic Structure, in the vertebrate animals, illustrated by upwards of 150 plates. By RICHARD OWEN, F. R. S., &c. &c., LONDON, 1840–41. We have received the first and second parts of this most splendid and magnificent work. Our limits at present precludes any further notice of it. We shall notice it, however, at some length, when it is completed. The third and last part is promised in 1842.—*Balt. Ed.*

On the Origin and Development of the Pulps and Sacs of the Human Teeth. By JOHN GOODSIR, JR., *Surgeon, Anstruther, Fifeshire.*—The above is the title of a very excellent paper of thirty-eight pages, published in the *Edinburg Medical and Surgical Journal.* A synopsis of the views of the author, we shall endeavour to present to our readers in a future number.

Development and Structure of the Teeth.—We learn from the last number of the "Boston Medical and Surgical Journal," that three memoirs, read at a meeting of the British Association, on the development and structure of the Teeth and Epithelium, by AEXANDER NASMYTH, F. L. S., F. G. S. &c. has been published.

These have been long anxiously looked for, and we are gratified to learn that they have at last appeared. We hope soon to be able to give a more extended notice of Mr. Nasmyth's views upon this highly interesting subject.

Surgical Operative and Mechanical Dentistry, &c. &c. by CHAS. DE LOUD, Surgeon Dentist, &c.; London, 1840; pp. 196, 8vo. The above treatise was received from the author, by the Baltimore editor, for the Baltimore College of Dental Surgery.

Treatment of the Primary Teeth.—M. DELMOND, has recently published a paper in a French journal, as we learn from "The American Journal of Medical Sciences," on this subject.

Plugging Teeth.—We learn from the excellent and ably conducted Medical Journal, alluded to in the preceding notice, that M. O. TAVEAU, has published in the French Lancet, some remarks upon this operation. We may notice them at length in a subsequent number.

The Guardian of Health.—As the relation of one of the editors of the American Journal and Library of Dental Science, to the above named periodical rendered it improper for us to notice it, we had determined to pass it by in silence, when we received the Boston Medical and Surgical Journal, containing the annexed remarks upon it.

The known character of this Journal gives us courage to lay before our readers its words of commendation. From a less distinguished source we should have hesitated to do so.

"*Guardian of Health.*—Thomas E. Bond, Jr., M. D. and Chapin A. Harris, M. D., of Baltimore, are the joint editors of an interesting monthly periodical, devoted to domestic hygiene, with the above title, a specimen of which, comprising Nos. 1, 2 and 3, is before us. In every family, whether at the south or north, this publication would be prized if there was a single ray of intelligence in the household. The article entitled '*Remedies in cases of Poisons and Accidents,*' printed on a card, and nailed up in every dwelling throughout the entire country, would save many lives which are annually sacrificed as martyrs to ignorance. The paper on croup is worth committing to memory by all mothers. In a word, the plan and whole execution of this new journal is unexceptionable, and we shall be gratified to aid in extending its circulation as widely as its merits deserve."

At the request of friends in New York, the 'Guardian of Health,' will hereafter be printed in newspaper form, and will contain such advertisements as may be proper to a journal devoted to the preservation of health. It will also be furnished in pamphlet form to all who desire it. Persons ordering it, therefore, will be particular to mention the form in which they wish to have it sent to them.

Miscellaneous Notices.

Omission.—In noticing the proceedings of the last meeting of the American Society of Dental Surgeons, we inadvertently omitted to mention the names of Charles Bromley, of Southampton, England, Mr. Rogers, of London, and Richard Helsby, of Manchester, England, who were elected honorary members.

Opening Address.—The opening address delivered by Dr. Hayden, at the late meeting of the American Society of Dental Surgeons, held in Philadelphia, we feel assured, will be read with pleasure by every member of the profession. It is not only an able and well written paper, but is highly interesting. It contains the fullest and most accurate history of the origin and progress of dental science in the United States that has ever been given. Having been actively and constantly engaged in the practice of dental surgery for about forty-five years, Dr. Hayden's opportunities for acquiring this knowledge has been ample, and we are gratified that he embraced the occasion of the delivery of this address, to impart it to those of his professional brethren, not so conversant with the early history of the science in this country. With its rapid advance during the last fifteen or twenty years, all are more or less familiar, but with its introduction into, and its early progress in the United States, few comparatively, were before acquainted.

The name of Greenwood, it is true; is known in almost every part of the civilized world, and though one among the first to exercise the duties of the dentist in this country, he ranked high in the profession during his time, but there were others who preceded, and that were cotemporary with him, and who, though not so extensively known, were nevertheless, possessed of much merit. Dr. H. has, therefore, conferred a favour in thus rescuing their names from forgetfulness, and placing them among those of the early cultivators of the art.

Preservation of the Teeth.—We earnestly invite the attention of the profession to the dissertation, read by Dr. L. S. Parmly, before the American Society of Dental Surgeons, at their last meeting, on the "Management of the Mouth and Teeth." If the truths that are therein so ably and forcibly urged, were more strongly impressed on the minds of dental practitioners, than they seem generally to be, the amount of their usefulness would be greatly increased, and much of the evil, resulting from the destruction of the teeth, which they are daily called upon to remedy, might be prevented. We hope, therefore, that more attention than has hitherto been bestowed, will be given to the prevention of disease in these organs, and that every dental surgeon, will not only urge its importance upon his patients, and more especially upon the heads of families in which he practises, but will also supply them with the means recommended by Dr. Parmly, for its accomplishment. With floss silk, argillaceous tooth polishers, and tongue scrapers, every practitioner should be provided, and if they cannot be procured elsewhere, they may be obtained from the New York editor of this Journal, Dr. Solyman Brown, 13 Park Place, who keeps a large and constant supply. As for ourself, we should feel that we were doing great injustice to our patients, were we not to keep them, and recommend their use.—*Balt. Ed.*

Professor Baumes' Work.—In giving place to the transactions of the "American Society of Dental Surgeons," we are compelled to occupy the library portion of this number of our Journal. We shall endeavour, however, to make up for this, by giving nearly the whole of our next to the continuation of Dr. Bond's translation of Professor Baumes' excellent treatise on first dentition. In pursuing this course, we are under the necessity of delaying the publication of several articles now on hand. We hope, therefore, we shall be excused by our correspondents for what might otherwise seem intentional neglect.

Materials proper for Plugging Teeth.—In a letter which will be found in another part of our Journal, addressed to the American Society of Dental Surgeons, by Dr. J. H. Foster, of New York, the superiority of gold over all other articles or materials employed for stopping teeth, is clearly and satisfactorily set forth. There can be but one opinion among well informed practitioners on this subject. All agree, that while there are many cases in which tin may be advantageously employed, pure gold is the only metal or material, except platina, that can in all cases be relied upon. It is incomparably better than any other substance. We commend to our readers a careful perusal of Dr. F's letter.

Popular Essays on Dental Surgery.—Six or seven of the essays ordered by the American Society of Dental Surgeons, have been published, and every member whose dues have been paid is entitled to twenty-five copies of each, gratis, but for all over that number, the rate of one dollar and fifty cents per one hundred, will be charged. We would advise the members of the Society generally to supply themselves with them. Much good may be accomplished by their distribution, inasmuch as they are calculated to do away with the false opinions which many entertain concerning this branch of the medical art, by the dissemination of correct views upon the subject. We think, therefore, that every well-informed member of the profession should contribute to the accomplishment of an object so much to be desired.

Annual Dues.—To carry into effect the objects contemplated by the American Society of Dental Surgeons, and among which, are the publication and distribution of the essays alluded to in the preceding notice, also, the publication of such other papers as may be contributed to it, tending to the advancement of dental science, and the procurement of a library, it is necessary that every member should be punctual and prompt in the payment of his annual dues. Besides, no member is entitled to vote on any question at the meetings of the society, until he shall have paid his membership fee, five dollars. Such of the members then as have not complied with this requisition of the by-laws of the society, we hope will lose no time in doing it. Dr. E. Baker, No. 6 Warren street, N. Y., is the treasurer, and the proper person to receive and receipt for all moneys paid to the society.

Mr. Charles Brown, Surgeon Dentist, of Woolwich, Kent, England.—The Baltimore editor takes this opportunity of returning to the gentleman whose name heads this notice, his most grateful acknowledgments for the beautiful drawing of the microscopic view of the internal membrance of a superior bicuspis, and for the letter which accompanied it—both of which is copied into the present number of the Journal. For the kind interest which Mr. B. manifests in behalf of the efforts that are at this time being made in the United States, for the elevation and advancement of dental science, he also feels profoundly grateful, and rejoices to learn that his professional brethren on the other side of the water, are disposed to lend a helping hand to a work, which, if *zealously* and *resolutely* prosecuted, must soon eventuate in placing the calling of the surgeon dentist on a footing with that of the other branches of medicine. This is a consummation earnestly to be desired, and it is to be hoped, that the period is not distant when it will be accomplished.

Embellishments.—The two plates with which this number of our Journal is enriched, were lithographed by Messrs. E. Weber & Co. of Baltimore, than whom, in this useful and most beautiful art, none, perhaps, in this country have attained to greater skill or perfection. The likeness of Doctor Hayden was taken from a painting executed sixteen years ago, but notwithstanding the effects of time, no one acquainted with the Doctor can fail to recognize in this, a strong resemblance to the original. The expression of the eyes and whole countenance, and the contour of the face and head are perfect.

The coloured plate is worthy of especial notice, as a fine specimen of a new and highly useful improvement in lithography. Until very recently, colouring was done by the pencil, and of course, was a very tedious and expensive process. Hence, anatomical plates, &c. have been so costly as to be beyond the reach of many who desired to have them. The art of colouring in lithography, we believe, was introduced into this country by Messrs. Weber & Co. and of the accuracy and beauty of which, our readers have an opportunity of juding from the specimen furnished in this number of our Journal. It is needless, therefore, to commend these artists to those who may have occasion to employ lithographers. Their work will do this more effectually than any thing which we can say upon the subject.

Singular Phenomenon.—We were presented a few months since, by Dr. Jenks, Dentist, of Fredericktown, Md., with a superior molar tooth, on one of the sides of the neck of which, about the eighth of an inch above the termination of the enamel upon the crown, and just where the bifurcation of two of its roots takes place, is a protuberance, the size of a pin's head, or perhaps, a little larger, covered with enamel. Now, what seems remarkable in this, is, that this protuberance is covered with enamel. We can very readily conceive that it could have been formed by a deposition of bone, but the presence of the enamel, according to the prevailing theory of the manner of the formation of this substance, renders its explanation somewhat difficult.

Since writing the above, another molar tooth, having a similar enamelled wart-like protuberance upon it, was presented to us by Mr. Savier, student of Dental Surgery, of Baltimore.—*Balt. Ed.*

Progress of Dental Science in America.—Under this head a writer in the London Lancet speaks very favourably of the praiseworthy exertions recently made in this country by some of our leading surgeon-dentists. It is well known that these exertions have resulted in the organization of the "Society of Dental Surgeons," and the commencement of the "Journal of Dental Science," both of which are justly extolled by the writer alluded to.

[*Boston Med. and Surg. Journal.*

THE AMERICAN

JOURNAL AND LIBRARY

OF

Dental Science.

VOL. II.] DECEMBER, 1841. [No. 2.

ARTICLE I.

A Treatise on Mechanical Dentistry. By SOLYMAN BROWN, M. D., D. D. S.

CHAPTER I.

1. IT is no part of the design of this series of articles, written at the repeated solicitation of many of my professional brethren, either to demonstrate the general utility of artificial teeth, or to persuade the community to procure them. The wants of the student in dentistry, will be consulted and met, as far as practicable, in the following treatise; and no pains will be spared by the author, in his efforts to collect and communicate in the plainest terms, all the practical instruction which the present condition of our art can supply.

2. Each section of this treatise will be numbered for the sake of convenient reference, and as many explanatory cuts will be given, as the nature of the subject may demand. If, in attempting to make the details of the art, perfectly intelligible to the student, the author should seem to the older members of the profession, to be too minute in his illustrations, they will no doubt on a moment's reflection, admit the validity of his excuse.

3. By MECHANICAL DENTISTRY is understood the art of constructing sets and parts of sets of artificial teeth; of inserting

single teeth on roots or fangs; and of constructing artificial palates in cases where the natural organ is deficient.

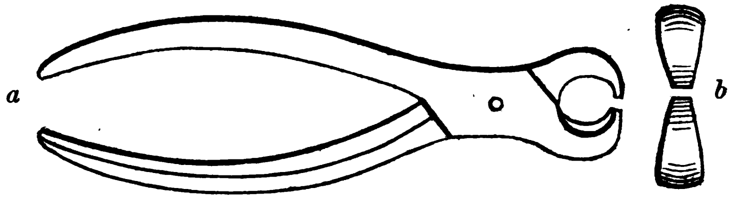
A description of the method of proceeding in every supposable case will be the object of this series of papers.

4. The implements proper to the mechanical dentist will be minutely described as they become necessary in the progress of the work; it being premised that a bench, hammers of various kinds, an anvil, vice, files, &c. must be understood to be essential.

5. It being the opinion of the author, founded on a settled conviction resulting from observation and experience, that the necessity of using human teeth, blocks of ivory, or other animal substance, is wholly superseded by the great improvements which have been recently made in the manufacture of incorruptible, mineral teeth; the directions given in this essay will relate exclusively to the latter, which he hopes every honourable practitioner will endeavour to introduce into his practice, to the exclusion of all substances which are liable to be decomposed by the fluids of the mouth, lose their beauty, and infect the breath with loathsome poison.

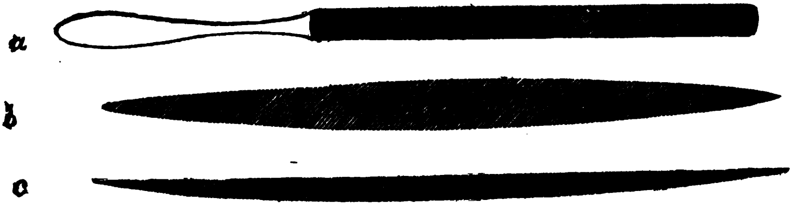
Of the Insertion of a Single Tooth on the natural root.

6. As broken parts of the crown often remain attached to the root, a pair of excising forceps becomes necessary. This instrument should be about five inches in length, having the cutting edges one-tenth of an inch in breadth.



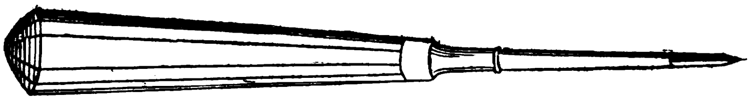
In this wood cut (*a*) represents the forceps, and (*b*) the breadth and shape of the cutting edges. These forceps should be of sufficient strength and material not to bend or spring under the pressure of the hands, and should be used with such gentleness as not to strain, shake, or otherwise injure the root.

After the prominent parts of the crown shall have been removed by means of the forceps above described, as nearly as possible to the semi-circular arch of the gum, a round, elliptical or half round file is employed to complete the process.



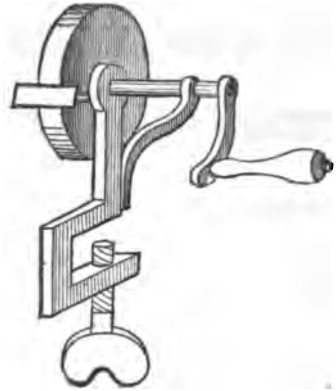
The file should be fine-cut, and ought to be used with delicacy, as well to save the sensibilities of the patient, as to avoid agitating the root to such a degree as to produce inflammation of the investing membrane and surrounding structure.

7. When the file has reduced the root to the edge of the gum, and even a little beyond it, the next operation is to perforate the fang, by enlarging the natural nervous tube by means of a broach or hand drill of something like the following construction.

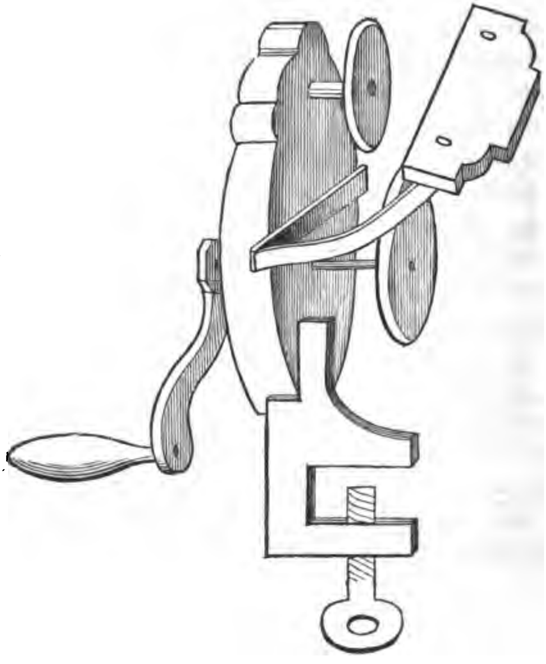


The point may be either square, or pentagonal like the common watch-maker's broach, and should be of sufficient size to produce an orifice capable of receiving a pivot of the size of a large knitting needle. Several broaches of smaller sizes are necessary to enlarge the natural orifice by degrees to the required diameter. The depth of the orifice should be one-fourth of an inch, in roots that will admit of it.

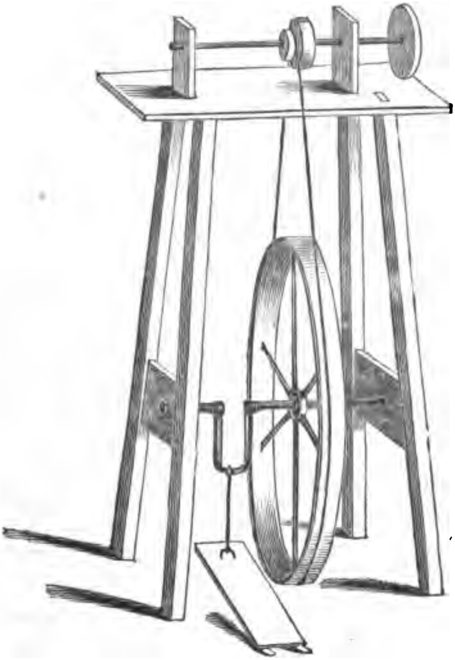
8. Select a mineral tooth as nearly as possible of the colour of the adjacent teeth, taking care that the shade never be lighter than that of the natural teeth in the same mouth. Let it be moreover of the proper length, breadth, and thickness, with as little grinding as possible. Some change of shape and dimensions, is however generally necessary, for which a suitable grinding apparatus is indispensable. Machines for grinding mineral teeth are of various kinds, of which a common grindstone is the most obvious and simple. Small and portable stones for the use of dentists, are prepared and mounted by dental instrument-makers, of which the following is a draft:



An improvement on this construction has been attempted by Messrs. Royce & Esterly, ingenious dentists, resident in Poughkeepsie, in the state of New York. This grinding apparatus consists of simple system of cog-wheels by means of which one of the two stones has an accelerated motion. This patent has the advantage of elegance of structure, neatness in the operation, and the easy change of stones of various dimensions; and is moreover well adapted to the use of a newly invented grinding wheel, which will be described hereafter.



The two foregoing machines for grinding teeth, are well adapted to the use of travelling dentists; but for those members of the profession who are stationary, foot lathes are much the most efficient. These may be of very simple construction, thus:



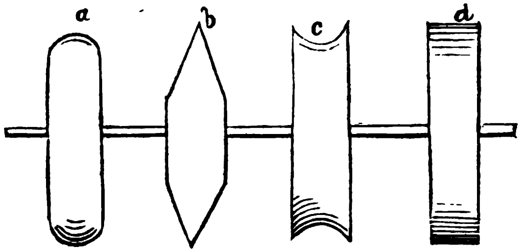
Lathes constructed on this principle may be enclosed in ornamental cases, and thus become articles of furniture not unbecoming the operating room of the genteel dental surgeon; but they are generally better fitted to the laboratory of the artificial workmen.

Of the stones or wheels employed in grinding mineral teeth, many varieties are in vogue. Some good workmen use wooden wheels about six inches in diameter, the circumferences of which are turned into convenient forms, and covered with hot glue and emery. These are commonly called emery wheels, and have been long used in the mechanic arts.

Many dentists still adhere to the use of grindstones of small dimensions, but from recent experiments I am led to prefer a composition wheel made of shellac and emery, combined in certain proportions when hot, afterwards cooled in moulds of strong metal provided expressly for the purpose, in which the material is compressed by great mechanical force.

10. The evident advantages of this species of grinding apparatus are, first, its little liability to change of form from constant use: secondly, its capability of retaining sharp edges, corners and curves, longer than any other substance hitherto employed; thirdly its economy, being exceedingly durable, and fourthly, the mechanical correctness of its execution, arising from its hardness and solidity.

The following are some of the convenient forms of the cutting edges of these wheels, as they come from the moulds.

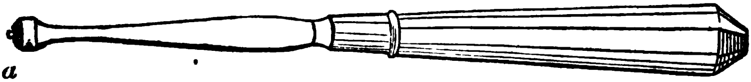


Although these edges, corners, planes and curves remain long with little apparent change, which is by no means true of any other wheels used for the purpose excepting copper ones; yet it must be evident that constant use will more or less change those original forms unless the mode of grinding upon them shall be calculated to preserve the primitive shapes; a point to which ordinary ingenuity will direct the attention of the artist.

11. As the maufacture of these wheels is attended with considerable expense, in the way of moulds and presses to give form and compactness to the materials used, it is presumed that dentists will prefer to purchase rather than to make them, and therefore any further description is deemed superfluous.

When the tooth has been carefully and accurately fitted to the stump or root by grinding, and made of the proper length, breadth and thickness, it may be fixed temporarily in its place with a pivot of white pine, poplar or other soft wood, for the purpose of affording the patient an opportunity of suggesting any alteration that may be desired.

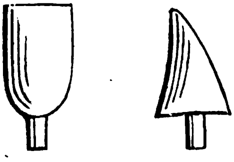
12. When all parties are fully satisfied with the appearance of the artificial substitute, and when the antagonizing teeth in the opposite jaw meet with no obstruction on closing the mouth, the tooth is ready to be permanently fixed in its place; but before proceeding to establish it firmly on its pivot, an instrument may in some cases be employed with advantage to cut away the central portions of the root in order to make a close fit of the crown to the stump.



When the point (*a*) of this instrument is inserted in the orifice of the root, a rotary motion files away the parts proper to be removed in order to perfect the joint.

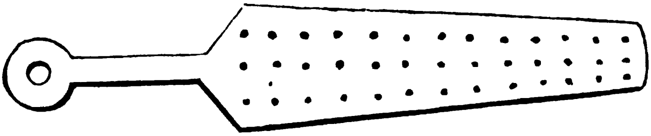
By placing eight or ten thicknesses of gold foil between the crown and root, the fluids of the mouth may be wholly excluded.

13. The pivot which is to sustain the new crown in its position, should be made of the best of hickory, as no other wood proper to the American soil, possesses so much strength and elasticity combined. Force the pivot, when properly rounded and smoothed with a file, into the orifice of the artificial crown, and cut the part of the pivot which projects from the crown to such length as the orifice in the root will admit; after which the size of the projecting portion of the pivot must be adjusted to the orifice of the fang. The force used to insert the pivot in the root need not be great, inasmuch as the swelling of the wood when saturated with moisture and heated to the temperature of the body, will secure it firmly in its place. The following are a front and a lateral view of a crown when thus prepared for insertion.

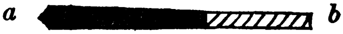


14. In some instances the cavity in the natural root has become by decay, too large for a pivot of the description just given, in which case pivots of gold or platina of a square or flat form made

jagged at the corners, must be substituted for the hickory, as follows: First fill the enlarged orifice of the root with a plug of soft wood, which must be trimmed neatly to correspond with the end of the fang. Then insert a similar plug into the mineral crown, into which plug screw the end of the metallic pivot after it has been passed through one or more of the holes of the following screw plate.

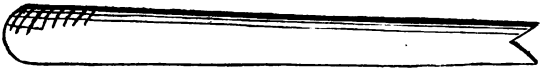


It will be evident that the metallic pivot just described, will be round at one end and square or flat at the other, thus:



The end (*a*) is inserted into the natural root, and the end (*b*) into the artificial crown.

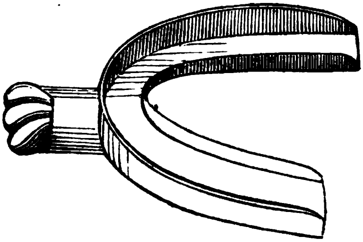
15. The final adjustment of teeth set in either of the methods just described, may be effected by the aid of a wooden instrument somewhat of the form which follows, and should be made of very tough and soft wood.



If the strength of the hand should be found insufficent to force the pivot perfectly into its place, a slight blow on the end of the wood, when placed upon the end of the tooth, will complete the operation.

16. It sometimes happens that the position of the root is such that a crown placed upon it as above described, will not occupy the desired position in the mouth, being too far back or forward, or having too great a lateral inclination to the right or left. In these circumstances an entirely new course must be pursued; another kind of mineral crown must be procured known as a *plate tooth,* in contradistinction to the former kind called a *pivot tooth.* The plate teeth are capable of being attached firmly to a metallic plate, and as gold is by far the best metal for this purpose, I shall denominate it throughout this treatise, a *gold plate.*

In a case requiring to be treated in this manner in consequence of some unnatural condition of the root or of the adjoining teeth, after filing and preparing the root exactly as before, take common beeswax and bring it to a pliable consistency by steeping it for a few minutes in warm water. When in the state of stiff dough or putty, place the wax in a frame made of tin, German silver, or other convenient metal, conformed to the arch of the jaw, as follows:



Of these frames the operator should be provided with various forms and sizes to suit mouths of different dimensions.

17. When a frame of the proper size and curvature has been filled with the softened wax, insert it cautiously into the mouth of the patient, and press the wax gently but effectually against the cutting edges of the teeth adjacent to the space to be filled, until the teeth and gums are completely imbedded in the wax, which should be pressed against the gums both inside and out, by the thumb and fingers of the operator, holding the frame firmly in its proper position with the other hand. The frame and wax are next to be cautiously withdrawn from the mouth in such manner as not to mar in the least the impression thus obtained. Let the wax cool, and then oil it with a soft brush and olive oil slightly; after which thrust a common pin or a small wire into the centre of each cavity made by the teeth in the wax, in order to render the plaster-cast taken from the wax less liable to injury.

Surround the wax thus prepared with a ribbon of paper two inches in width, secured to the wax by pins or twine, and then set the whole in a vessel of sand which will secure the paper in its place.

18. Take calcined plaster of Paris or gypsum, ground and sifted, and mix with it a sufficient quantity of water to reduce it to

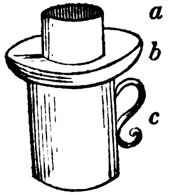
creamy paste, the exact consistency of which is best determined by taking in a small vessel as much water as would nearly fill the wax mould and the paper rim, and dropping into it little by little as much superfine plaster as shall just absorb all the water, then stir the mixture for a moment and turn it into the mould.

After fifteen or twenty minutes, as must be determined by the quality of the plaster, and the lapse of time since its calcination, the paper may be removed, and the wax together with the plaster-cast immersed in warm water until they can be separated with ease and safety. Trim the cast with a sharp knife, being careful to give the whole such a form as will be easily withdrawn from the metal which is to be cast upon it. Dry the plaster thoroughly and it is ready for use.

It is always best and sometimes necessary to take two similar casts in the manner just described, for distinct purposes, as will be seen hereafter.

19. Some good artificial workmen take their metallic castings in sand, after the manner of brass and iron founders, but I have found the following process to be much more direct and explicit, and every way successful. Take an iron ladle of hemispheric shape, and capable of holding at least a pint and a half of fluid; melt in it as much lead as will nearly fill the ladle. Into this molten lead immerse one of the plaster-casts, and depress it by laying weights upon it till the points of the teeth shall be sunk about one inch below the surface of the melted lead in the ladle. When cool, immerse the whole in water, and carefully remove and wash away the plaster. Cover the surface of the lead with which the other metal is to come in contact, either with the smoke of a lamp, or with *whiting* laid on wet with a brush, in order to prevent the adhesion of the melted tin which is to be poured into it.

Dry the leaden mould well, and place it on a vessel filled with water or wet sand, so that the lead shall be sunk in the water or sand about an inch, to prevent its fusion when the tin shall be poured into it. Surround the impression of the teeth in the mould with a rim of tin, copper, or brass, an inch or more in width, as in the following cut:



(*a*) Denotes the metal ring. (*b*) Denotes the leaden mould. (*c*) Denotes the vessel with water or sand.

Fill the rim (*a*) with melted tin just at the point of fusion, or at such a temperature that it will not char dry pine chips or shavings; at any temperature higher than this there will be danger of fusing the lead, and thus of uniting the metals into one mass. But inasmuch as the tin fuses at a lower heat than lead, and as the cold water or wet sand will maintain the low temperature of the lead, there will be no danger of spoiling the cast, in case the foregoing rules are carefully regarded. The two metals when cool must be separated by means of a heavy hammer, assisted when necessary with wedges of iron. The two parts of the mould are now ready for use. Experience will soon instruct the beginner so to trim the plaster-cast, as that the tin may be withdrawn easily from the lead.

20. The operator is now provided with metallic casts similar to those which he will be frequently called upon to take in the exercise of his art, and between which his plate is to be struck.

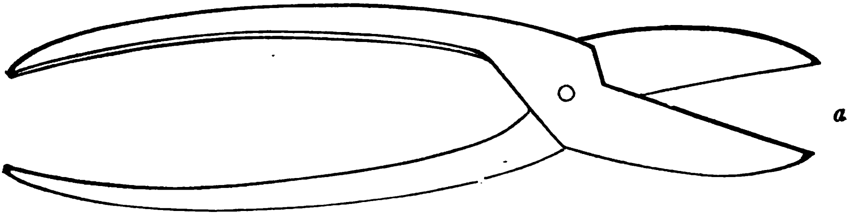
Let him then in the next place, cut a piece of gold plate of the thickness of a smooth shilling into such shape as exactly to occupy the space on the tin cast in which the tooth is to be inserted. When the gold plate is adjusted in its position, and bent by the aid of a hammer or pair of pliers nearly into the shape desired, bring the tin and lead casts together upon it, and with a smart blow with a heavy sledge-hammer, force the two metals into close contact, by which means the gold plate is swedged into the exact shape of the parts to which it is to be applied.

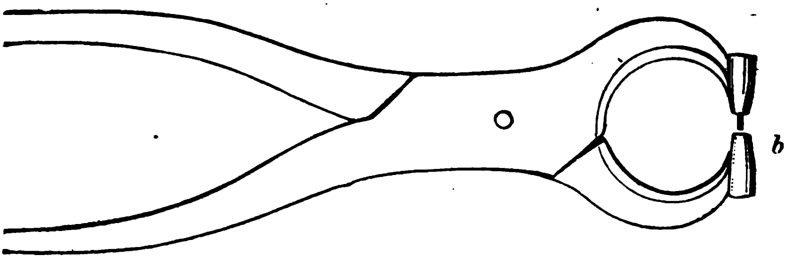
This latter operation is sometimes performed by means of a powerful vice which perhaps effects the object with equal certainty.

21. Separate the casts once more, and place the gold plate on the second plaster-cast, which has been reserved for this part of

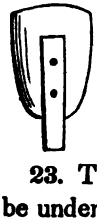
the process. If the casts were equally perfect, the plate will fit the plaster-casts as it did the tin; and perhaps I may as well mention it here as any where, that if the operator wishes his plaster-casts to be clean and hard, it should be made warm and smeared with two or three coats of boiled linseed oil, applied in quick succession by means of a common paint brush, and then suffered to dry.

22. A plate tooth must now be selected of proper color, form and size, and having platina pivots inserted during the process of its manufacture to attach it to the plate. At this point the operator finds the necessity for two implements of the description following:

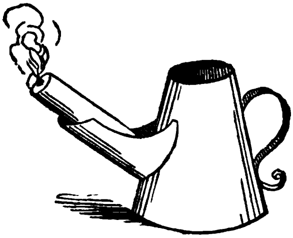




The shears (*a*) must be strong; and the plate-punch (*b*) of sufficient material to sustain the force required to perforate the plate without springing or breaking. With the use of these instruments together with a half round file, cut a plate of gold nearly as large as the back surface of the tooth; punch the holes as required, and insert the pivots as in this cut.



23. The process of soldering the tooth to the plate, must now be understood. To this end, procure a soldering lamp of some thing like the following form.



The orifice of the spout into which the wick is inserted, should be at least three-fourths of an inch in diameter, and the vessel capable of containing a quart or more of oil.

24. A large blowpipe sixteen inches in length must next be procured, having a large orifice, and yet capable of bringing a jet of flame to an exact focus when required. The long blowpipe presents a too great exposure of the eyes of the operator, and a pair of green glass goggles contribute to the same desirable result. Before lighting the lamp, cover the surface of the tooth on every side excepting that on which the plate is fixed, with a coating of plaster or Spanish white and water, and when time will permit suffer the coating to dry before exposing it to the blowpipe.

25. The surface of the gold plate already slightly rivetted to the tooth, must be washed with a solution of borax (subborate of soda) ground with clean water, and laid on with a camel's hair brush, and care must be taken that every part of the work where it is desired that the solder should take effect, should be touched with the solution. The best surface on which to grind or rub the borax is a common slate, such as children use at school.

The solder employed with plate twenty carats fine, may be prepared as follows: To one English sovereign or half an American eagle, add eighty grains of silver and forty grains of copper. Melt once with borax. In order to fit it for convenient use, it should be rolled into thin plate and well cleaned.

26. As some students may desire to understand the process of manufacturing their own plate in cases of necessity; Take an English guinea or sovereign, or an American half eagle, and alloy it with an American five cent piece of silver, which will reduce it to something less than twenty carat gold. Melt the two metals in a crucible with a small lump of borax and when cast into an

ingot, hammer and roll for use. After being rolled the plate should be annealed by heating it to redness; and then cleaned by boiling in sulphuric acid diluted with water.

27. The foregoing hints are deemed sufficient to guide the student in the preparation of his own solder and plate when compelled to prepare them for himself; but as a rolling mill and other implements are necessary to this course, dentists generally procure their plate and solder ready prepared.

28. In submitting a piece of work to the action of the blowpipe, a piece of charcoal, cork or pumice stone is used to sustain the work and confine the heat. Charcoal is most readily obtained in masses of convenient size, but a large and flat piece of cork, or a block of pumice stone answers nearly the same purpose, and on some accounts are frequently preferred. When soldering whole sets of teeth or large pieces, a round block of charcoal four inches in diameter and six inches in length, hollowed in the form of a mortar, and having the outer surface covered with plaster laid on smoothly with a knife or trowel, will be found very useful and durable.

29. When first bringing the flame of the soldering lamp upon a mineral tooth under the blowpipe, care must be taken to raise the heat slowly, lest a too sudden expansion of the surface of the enamel should crack it, and render the tooth useless; and a similar caution should be used when cooling the teeth after the operation of soldering has been completed.

30. The skilful use of the blowpipe requires that a constant blast should be given till the solder fuses; or at any rate the interruptions should be few as possible. To this end the operator must acquire the habit of breathing through his nostrils while a stream of air is constantly projected from the blowpipe by the action of the muscles of the cheeks, which may be made to expel a current of air from the mouth even during the act of inhalation through the nostrils. This process requires some practice, but may be effectually acquired by determined perseverance, without it the process of soldering can be but imperfectly effected.

Doctor Black's self-acting blowpipe in which the burning steam of alcohol is used instead of oil, may be managed successfully by a careful workman after a little practice, but the heat being very powerful exposes the gold to fusion. For general use the soldering lamp just described will be found the most safely available to the mechanical dentist.

31. When the piece to be soldered has been brought to redness, the operator should watch the progress of his work carefully so as to be ready to remove the piece from the flame the moment the solder fuses and spreads as desired over the surface of the gold. This should be done for two reasons, first, that the plate itself may not be melted as well as the solder; and secondly, that the solder may not be too much dissipated by an excess of heat. The great art of soldering consists in knowing just the quantity of flame proper to be used in a given case, and the exact point of time when the heat should be withdrawn.

After the piece has become entirely cool, it may be placed in an earthen vessel containing equal parts of water and sulphuric acid. Indeed any *simple* acid may be used with safety and success, taking care that nitric and muriatic acid be not used together, for this mixture constitutes the *aqua regia,* which is the only sure solvent of gold.

The action of the diluted acid will be accelerated by heat, which requires a copper vessel: but if the water has been recently mixed with the acid, sufficient heat will be evolved by the chemical union of the two fluids, to accomplish the purpose of cleaning the gold in a few moments.

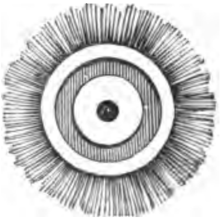
32. The surface of the solder may now be rendered smooth by the use of files, when the tooth and its plate will be ready to be united; but before this is done, a gold or platina pivot must be inserted in that precise point of the plate which corresponds with the orifice in the root of the tooth, and this pivot should be square or flat as described in section 14. When this pivot has been soldered into the plate so that it will exactly fit its place in the mouth, adjust the plate to the second plaster-cast so that it will fit it as it does the place in the mouth where it is to be permanently worn. Then with files and the grinding apparatus fit the tooth to the plate, and give it the exact position desired as regards the adjacent teeth, and those in the opposite jaw. Support the tooth when rightly adjusted, by means of plaster of Paris mixed with equal parts of common sand, and applied in a state of paste to the surface of the tooth and the adjacent parts of the plaster-casts. The sand has the effect of preserving the plaster from cracking when heated by the blowpipe.

33. The piece is now ready when well dried for its final soldering; and as a great quantity of heat will be required to bring the plaster-cast to the temperature necessary for fusing the solder, the whole may be heated to redness in a ladle over a fire; or the concave piece of coal before described may be used for confining the blast of the blowpipe.

34. Use a liberal quantity of solder in joining the backs of the teeth to the principal plate, in order to give both strength and beauty to the work.

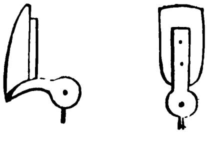
Indeed this is a part of the work which should never give way, because there is always room in this sharp angle to use a quantity of material which shall secure it from fracture.

35. If the work has been properly conducted thus far, all that part of the plate not covering the end of the natural root, and connecting with the tooth, may be filed away; and then the whole should be polished on a lathe similar to that which has been described as a grinding apparatus in section 8, by means of a brush wheel, as follows:

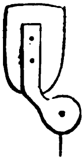


Common sand, ground pumice stone, emery, the *debris* of a grindstone, or crocus, may be used on the brush with water, and the final polish may be given with a similar circular brush and dry whiting.

36. In case the tooth requires to be set farther forward than could be done on a wooden pivot, the piece constructed as already described, will have the following appearances when viewed laterally and from behind.



When the pivot requires to be placed on one side of the centre of the tooth, it may assume the following appearance.



As metallic pivots are liable to work loose when inserted in the naked bone of the root, a covering of floss silk or even of raw cotton wound upon the pivot, will have the effect of preventing the friction of the bony structure. Or in some instances when the size of the root will allow it, a plug of soft wood may be first inserted, into which the metal pivot may be gently driven.

In concluding my directions for inserting a single mineral tooth upon a natural root, it becomes necessary to apprise the student of the propriety of so placing and shaping the artificial crown, that it may not come in contact with the teeth of the opposing jaw, inasmuch as constant agitation would soon either break or loosen the pivot, and thus render the work useless.

[TO BE CONTINUED.]

ARTICLE II.

Letter from DR. ISAAC I. GREENWOOD, *Surgeon Dentist, of New York, to the Baltimore Editor.*

DEAR SIR:—Permit me to state a case for your consideration of disease of the dexter antrum, or great maxillary sinus, which presented itself to me some two years since, with its cure as performed under my treatment at the time.

During the years 1838-9, a young man about twenty-two years of age, applied to me to have a medium molar tooth of the upper maxillary filled. I cleaned out the cavity, (the pulp and branches of the medullary canal having to appearance been destroyed for some time,) and performed the operation, as I thought, perfectly satisfactory both to the patient and myself, he complaining of no inconvenience at the time, and seeming well pleased with the operation. In about a week after, he returned, complaining of a heavy pain in the head and temples, telling me at *this time* that the tooth had bothered him (as he expressed it) some time before I had plugged it very much. I took out the filling and found a very fetid smell to come from the aperture, and a small discharge of discoloured watery humour. I placed some raw cotton saturated with kreosote and laudanum into the cavity, and sent him away. He however returned the next day, and complained of a sensation as if molten lead was in his cheek-bone, and that he could not use his right arm (he was by trade a carpenter) on account of its weakness, and the constant pains and heaviness in his head, and the muscles of the cheek on that side, when he attempted to drive a plane in smoothing of boards; he likewise felt a sleepy sensation, but could get no rest from the continued benumbing feeling accompanied by twitchings in the region of the eye and the muscles of the face. From what he told me I knew it was useless to allow the diseased organ to remain and accordingly I extracted it. Considerable pus followed the operation, accompanied by a somewhat sanguineous discharge from the alveolus. This being arrested, I proposed to him to allow me to open an aperture into the antrum highmorianum, which he consented to, and taking a straight three side headed perforator, and driving it gently, and by a spiral rotary motion, following one of the facial alveolar fossæ about an inch or more into the great sinus. The result was, immediate relief and a considerable flux of fetid dark coagulated blood and matter, or pus. The orifice made by the perforator was about the size of a common pipe stem, such as used in smoking: this I made somewhat larger, and when the oozing had in a measure abated, I wrapped some raw cotton round the end of a piece of straight iron wire, and dipping it into a mixture of muriatic acid, kreosote and aqua rosæ, I forced it into the antrum, and giving it a rotary motion from side to side, endeavoured to mix up the pus, &c. with the solution introduced. This I did two or three times, and each time after the introduction of the mixture as applied, I used dry raw cotton alone, to endeavour to absorb as much of the impurities as possible. I then placed some raw cotton, saturated as above into the cavity, to remain there, and sent him home, telling him to return the next morning. When he came, I again cleaned out the antrum with dry raw cotton and the same mixture as before, although not so strong as that used the time previous, and required him to come in *three* days, as he now felt much better. He did so, when I used a mixture of the acetate of plumbi and aqua rosæ, and treated the cavity the same as before, telling him to keep the body open by gentle aperients. He had been enabled to sleep and felt much better. There was a continual discharge from the sinus. When he called in a week after, he was much better, in good spirits, and enabled to use his arm somewhat, but not satisfactorily; and could attend to his trade, but not much. I advised him to continue the aperients and syringe the cavity frequently with *suds* made from tepid soft water and old Castile soap, and to bathe the external surface of the temple and cheek with tepid water and vinegar and laudanum in equal portions; which he promised to do, and as I heard no more of him conclude the cure was effected.

In the instance of a case treated by my father, John Greenwood, nothing was prescribed but *tepid Castile soap suds*, to be repeatedly injected into the antrum by means of a syringe, until cured, which was effected in a short time after having applied the remedy; and the gentleman is now living to attest the perfect propriety of the prescription, in the complete restoration of the healthiness of the parts diseased.

With sentiments of sincere respect and esteem, dear sir, yours respectfully, ISAAC I. GREENWOOD.

ARTICLE III.

Observations on Abscess of the Antrum Maxillary. By S. P. HULLIHEN, Wheeling, Va.

THE Antrum Maxillare is subject to a variety of diseases, the most common of which is the abscess of this cavity.

Mr. Bell, in speaking of this disease considers it to be nothing more than an altered secretion of the membrane, and observes:—"The term abscess as applied to the disease in question, has given rise to very mistaken notions of its nature, and not less erroneous principles of treatment. A reference to the structure of the antrum, would appear to be sufficient to point out the improbability, to say the least, of the occurrence of abscess in such a situation. That a mucous membrane covering in a thin layer, the whole internal surface of such a cavity, should become the seat of all the consecutive steps of true abscess, is a statement bearing on the face of it an obvious absurdity. The disease is in fact nothing more than an altered secretion of the membrane.

This opinion of Mr. Bell, is surely as erroneous as any that has ever been advanced upon the subject. A mere glance at the origin of the disease will satisfy, I think, the most superficial observer, that it is in the strictest sense of the word, abscess, and must be considered as perfectly indentical with alveolar abscess, proceeding from the same cause, the progress and development of both being the same.

The abscess of the antrum and of the alveolus both originate in the formation of pus in the internal cavity of a tooth. Whenever the nerve of a tooth becomes nearly exposed by caries, fracture, or other causes, it is subjected to much irritation and consequent inflammation, which sooner or later runs into excess, and suppuration of the nerve and vessels is the consequence. When matter is thus formed, if it cannot escape through an opening in the crown of the tooth it will immediately commence oozing out at the foramen of the fang, and effuse itself around and between the point of the root, and the bottom of the alveolar cell. The matter now is rapidly secreted, and soon finds its way through the thinner plate of the alveolus which is generally the external, and here it is again effused between the gum and alveolus, forming what has been very generally termed, "alveolar abscess."

Now if the fangs of such a tooth as just described, proximate the antrum so near, that the floor of this cavity is thinner than either plate of the alveolus, the matter always seeking that direction where there is the least resistance, finds its way into the antrum, and is effused between the bone and its lining membrane. Or if the fangs of such a tooth penetrate the antrum, the membrane of this cavity being always continuous over the fangs, the pus is effused between the membrane and the bone, thus forming in either case a true abscess in the antrum. The abscess now enlarges by secretion from the surrounding parts, until the distended membrane bursts, and the matter escapes from the antrum through the duct into the nose.

To show further the identity of abscess in the antrum and that of the alveoli, at the commencement of an alveolar abscess, a tooth in which the nerve and vessels are suppurating always becomes very painful and sore, appears a little loose and longer than the rest, giving rise to the generally received opinion that alveolar abscess originates in an inflammation of the periosteum of the fang or of the alveolar cell. At this period of the disease pains dart along the courses of the nerves, to the ear, temple and side of the head. Within twenty-four hours the face generally becomes swollen, and the character of the pain changes to one of a constant throbbing, in the gum over the sore tooth. The pain continues without much abatement for several days, until the abscess breaks and begins to discharge; then all pain immediately subsides.

The same kind of symptoms in every particular experienced in alveolar abscess, always accompany the formation of an abscess in the antrum. A tooth situated under or near this cavity first becomes very painful and sore, and appears loose and longer than the rest; then great pain is experienced in the ear, temple, and scalp; the cheek becomes more or less tumefied; and then the description of pain changes to one of a throbbing character, deeply seated in the jaw, and so continues for several days until the abscess breaks. A discharge through the nose instantly follows, and the pain in the jaw subsides.

Again, after an alveolar abscess occurs, an incurably diseased state of the periosteum, covering the point of the fang in which the abscess originated is frequently induced, and for several months after it is liable to become inflamed and painful on taking cold. When such inflammation takes place, a pain not generally of much severity is experienced. The tooth again becomes sore, the gum suddenly inflames and puffs up where the original abscess broke through it. In a few hours a discharge of matter usually follows and the pain is entirely removed. Such formation of pus in the gum may occur in the same place several times in a month, and constitutes what has been termed by some gum-boils.

After an abscess has occurred in the antrum, it is subject to the same kind of symptoms and the very same results follow as after alveolar abscess. Upon taking cold, the patient will experience a dull throbbing pain in the jaw, just sufficiently severe to be annoying. A tooth situated under or near the antrum becomes sore, in a few hours an increased discharge of matter from the antrum through the nose takes place, and the pain in the jaw subsides. This increased discharge from the antrum may continue for a few days, and then gradually diminish until it is scarcely perceptible, and will so remain until pain in the jaw and soreness in the tooth is again experienced, and then an increased discharge from the antrum will as certainly follow.

These strong marked symptoms and discharges from the antrum, are only experienced during the first year or eighteen months after the formation of the abscess. After that period, the parts from the effects of disease, are rendered less liable to become inflamed and painful from any constitutional or local cause. The membrane of the antrum is likewise more involved in disease, rendering the discharge from this cavity of a more uniform quantity.

The foregoing facts together with many others I might adduce, force me to the conclusion that a true abscess of the antrum does frequently occur, and that it must be considered as perfectly identical with alveolar abscess; both originating in the same cause, the progress and development of both being the same; differing only in their locality and the consequences that naturally result therefrom.

Treatment of Abscess of the Antrum.

From the situation and structure of the antrum, it is indispensably necessary whenever it becomes diseased to make an opening into its cavity. The size of the opening should always be made with a strict reference to the state of the disease.

The first stage of Abscess.—During the formation of an abscess, and when the patient is subject to pain in the jaw followed by an increased discharge, and the character of that discharge is healthy and well digested pus, a perforation into the antrum of such dimensions as to suffer the matter to escape freely, will be sufficiently large.

The method of opening the antrum in such cases, is after this manner. The tooth which from all the circumstances appears most probably to have caused the disease, should be extracted and a perforation large enough to admit a common quill, made into the antrum through that alveolar cell in which the fang most diseased was situated.

The trocar employed for this purpose, may be shaped like a common drill and used by grasping it firmly in the hand and carefully introducing it into the proper cell, then by pressing upwards and making a few rotatory motions the operation will be performed.

The after treatment consists in injecting into the antrum once or twice a day, mild washes of such a strength and character as the case may require; and in keeping the orifice made into the antrum, freely open as long as there is the least perceptible discharge. This may be accomplished by cutting the flesh out of the orifice, from time to time, instead of endeavouring to keep it open by the insertion of wooden plugs, and the like, which always prove a source of irritation, prevents the escape of matter as soon as formed, and as far as I have been able to observe, is never necessary to keep foreign substances out of the antrum.

Second stage of Abscess.—Where the disease is of long standing, or where the discharge is rather uniform in quantity and very fetid; and when the matter is so acrid as to excoriate the nostril and lips; it will be necessary to make a large opening into the antrum before a cure can be effected.

Method of performing the operation.—A tooth, and sometimes two should be extracted, and a perforation made through the alveolar cell as before described. After removing the gum as far as necessary, a small saw about the size of a common penknife blade may be introduced into the antrum through the opening made by the trocar, and a portion of the alveolus and floor of the antrum sawed out together, sufficiently large to admit the end of the finger into the sinus.

The after treatment is to some extent of the same character, as in the first stage of abscess. But when a pathological view is taken of a long diseased and spongy membrane, and the physiological action necessary for its restoration, something more appears to be necessary, at least to bring about a speedy cure. The first object that is to be attained in the treatment of such a membrane, is to promote absorption. The second of equal importance, is to regulate the action of the secreting vessels and to keep them unloaded, and as free as possible from tumefaction. Then changing the action of both by deobstruents or local alteratives, the membrane may be restored to a healthy state. Taking this view of the subject, I have been induced to use *friction,* and with decided success. This may be done by brushing the membrane once a day or more, with a small stiff brush made expressly for the purpose. By this means the secreting vessels are stimulated and throw off considerable, the blood vessels still more; the membrane is reduced in thickness, the application of washes rendered more effective, and thus a cure may be accomplished much sooner than by the usual mode of treatment.

In the next number of the Journal, I will offer a few obervations on "muco-purulent secretion," of the antrum, and show the difference between this disease and abscess of this cavity.

ARTICLE IV.

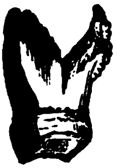
Case of Ozæna, accompanied by frequent paroxysms of Neuralgia Faciei, cured by the Extraction of a Tooth. By CHAPIN A. HARRIS, M. D. Baltimore.

MR. S——, a resident of a neighbouring county, of a full habit, and slightly disposed to scorbutus, had, for a little more than two years, been the subject of an obstinate and distressing affection of the left nasal fossa, and of frequent attacks of pain, which he represented as being, at times, almost excruciating—commencing immediately over the first left superior molaris, thence shooting back to the angle of the jaw, then to the ala of the nose, inner angle of the eye, and not unfrequently to the top of the head. Ulceration had taken place in the mucous membrane of the affected nostril, and a thin fetid matter, occasionally streaked with pus and blood, was almost constantly discharged, excoriating the parts with which it came in contact. The cavity of the nostril had become so much closed by the thickening of its membranes, that the passage of air through it was prevented; the external integuments had assumed a dark florid appearance, and become considerably tumefied and sensitive to the touch.

His teeth having been suspected, though to all appearance perfectly sound, as having some agency in the production of the neuralgic affection, he was directed to a dentist to have them examined, but as none of them exhibited any signs of decay, it was thought to be dependent upon some other cause. Accordingly the remedial means usually employed for this, as well as those for the other affection under which he was labouring, were prescribed; but from their use, although continued for several months, and under a variety of modifications, he derived no benefit.

His complaints becoming more and more aggravated, he at length became apprehensive as to their result, and determined by the advice of his friends, to visit several of the medicinal springs in Virginia. At one of these, he met with an eminent medical gentleman from one of the northern cities, whom he consulted, but neither from his prescription nor the use of the waters of any of the springs that he visited, did he obtain the slightest relief, and after remaining from home two months, he returned in a state almost bordering on despair.

To add to his affliction, he about this time, began to be annoyed with a constant pain in the region of the antrum of the affected side. This, in connection with a soreness in a tooth immediately beneath, which he had felt throughout the whole course of his protracted and complicated disease, but which had not until now been sufficiently great to attract particular observation, soon led to the discovery of the cause both of the nasal and neuralgic affections, and also to the means by which they were finally cured. The pain in his jaw continuing to increase, and from its resemblance to tooth-ache, he was induced, September 9th, 1839, to apply to me for advice. From the description which he gave of it and the other circumstances connected with the case, the belief that the antrum was diseased, and that a morbid condition of some one or more of his teeth or their sockets, had been chiefly instrumental in its production, at once forced itself upon me. With a view of satisfying myself more fully on this point, I gave his mouth a careful examination. His teeth, at least so far as their crowns were concerned, were all free from disease, but the socket of the first left superior molaris, which was that of the sensitive tooth, was considerably wasted—the tooth itself, particularly its outer and posterior surfaces, thickly coated with tartar, slightly loosened and partially protruded from the jaw; whilst the surrounding gum was inflamed and spongy. The tooth having thus, as it would seem, from some causes or other, become obnoxious to the parts within which it was contained, and as it had no antagonist, its removal appeared to constitute the first and principal indication of cure. To this, upon its being advised, he readily submitted. The operation was followed by a sudden gush of thin fetid matter from the antrum, which communicated with the socket of the tooth by an opening sufficiently large to admit of the easy introduction of the end of a small goose-quill, and a subsidence of pain. The cause of his complicated malady was now revealed. The roots of the tooth, as may be seen from the following drawing, which is an exact representation of the tooth, were found to be greatly enlarged by exostosis.



The intervening transverse and longitudinal alveolar walls had been destroyed, and the place which they had formerly occupied filled with fungus. The edges of the surrounding wall were considerably wasted, and its surface interiorly, rough and enlarged.

A strong solution of *argentum nitratum* having been applied to the diseased socket, by means of a camel's hair pencil, and the antrum syringed out with diluted tinct. myrrh, which last was directed to be repeated twice a day as long as the opening into that cavity should remain unclosed, the balance of the cure was entrusted to the restorative energies of the economy.

The following day he left the city, and I heard no more of him for six weeks; at the expiration of which time he again visited it, and called to inform me of the amendment that had taken place in his condition. He was now able to breathe through his left nostril almost as freely as the right—the discharge from it was greatly diminished and of a more healthy character. He had had but one return of his neuralgic affection, which occurred the fourth day after the removal of the tooth, and was less severe than any of the former paroxysms. The opening into the antrum had closed, and the socket was rapidly filling with healthy granulations.

December 3d. I again had the satisfaction of seeing him and of being informed that every vestige of his nasal and neuralgic affections had disappeared.

REMARKS.

The circumstances connected with the history of the foregoing case would seem to justify the conclusion, that the irritation produced by the enlargement of the roots of the tooth, had given rise to a morbid excitement in the mucous membrane of the antrum maxillary—that this had extended to that of the left nostril, where the parts being more exposed to external irritating agents, had taken on a new and more aggravated form of disease; and that the neuralgia was the result of the irritation in the nose, antrum or socket, and most probably the last. How far the deposition of tartar that had formed on the tooth may have been accessory to the exostosis, is a question perhaps not easily solved. That it might produce such an effect can very readily be conceived, for when we take into consideration the morbid influence the presence of this substance frequently exerts upon the secretions of the mouth, the gums and alveolar processes, it will not appear at all strange that it should give rise to this. The disease being dependent on inflammation of the periostia of the roots of the teeth, may be brought on, when favoured by a constitutional tendency, by any thing producing preternatural excitement in these membranes, and that salivary calculus often does this, is a fully recognized axiom in dental pathology. But how far it may have been concerned, either primarily or secondarily, in its production in this instance, I will not take upon myself to determine, inasmuch as there was one other circumstance connected with the history of the case, that may have been the primary cause of the whole disturbance. That was, the want of an opposing tooth against which for this to act; and it may be well here to remark, that whenever this happens, especially to a superior molaris, and in the present case, it had existed, as I was informed, for about seven years, the surrounding gum is apt to become inflamed, the periosteum of its roots morbidly excited, and the socket to waste and sometimes to become gradually filled with ossific depositions,* as though nature, conscious that the organ was of no further use, exerted her energies to expel it from the jaw. This tendency, every dentist of observation and experience must have noticed, and Dr. Koecker, a distinguished European practitioner, in accordance with what would thus seem to be a law of the economy, recommends the extraction of all such teeth; but, as there are frequent instances where, by proper attention to their cleanliness, they may be permitted to remain with impunity, this advice should not always be followed.—*Md. Med. and Surg. Jour.*

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* The doctrine that teeth, after having lost their antagonists, are sometimes partially displaced by the gradual filling up of their sockets at the bottom,

ARTICLE V.

Galvanism. By George G. Brewster, Esq. Portsmouth, N. H.

Messrs. Editors:—I have carefully examined the contents of Mr. Brockway's paper, published in your valuable periodical (lib. i, fol. 127) relative to the discovery he presumes himself to have made, and which inclines him to aver, "that the present method of attaching teeth to gold plate ought not to be continued; the different metals combined converts the mouth into a galvanic battery."

To enter into the *multimodus operandi* of galvanic action, for the purpose of disproving the views expressed by that gentleman, would require much time in the preparation, and occupy a greater number of pages in the Journal than could be properly afforded, or the merits of the theme could justly demand.

A philosophical discussion could go no farther than to prove that the nature of the subject of galvanism is of no greater im-

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with ossific matter is denied by some; but the writer of this has met with several instances, as was clearly ascertained after the extraction of the teeth, where depositions of bone had actually taken place, and in five or six cases, in considerable quantities. He has also conversed with several of his professional brethren, who say they have observed the same thing, and among the number, Dr. H. H. Hayden, of this city, a gentleman whose scientific attainments and professional acumen would render any deception in the matter altogether improbable.

The establishing of this fact, though somewhat irrelevant to the subject under discussion, was deemed necessary, in order to show the morbid effects that are frequently induced in the gum and socket of a superior molaris, by the loss of its antagonist.

portance to the science of dental surgery, than magnetism, electricity, or even astronomy. It may be considered but in common with the laws of nature, and as the mere result of a chemical action.

I shall be laconic in this treatise, presuming every intelligent practitioner of dentistry will be satisfied with being reminded of the principles of galvanism, so far only as have the nearest relation to the views presented in Mr. Brockway's vague theory, and presenting for the consideration of those who give credence to that gentleman's doctrine, a few of the many cases which have come under observation since he introduced his novel ideas to your readers.

It must be self-evident to any person having a tolerable acquaintance with the nature of galvanism, that according to Mr. Brockway's description of that which he conceives to be galvanic action, there could not have been a perceptible effect of voltaic character, beyond that which he felt in the region of his philosophizing imagination. Ascribing the "several successive shocks," felt by his patients to galvanic action, could, with as much propriety have been attributed to any other cause, and certainly to that of a mechanical, with much more rationality.

The subject does not call for discussion, until attempts are made to establish the novel ideas advanced in Mr. Brockway's hypothesis; and until then it may not be unsafe to hold as an established principle in the laws of nature, "that galvanism has no farther action than there is a chemical decomposition of its most effective elements." And as an inference and natural consequence, that a long series of galvanic action must so result in the change and waste of particles of its elements as to give occular proof of the degree of corrosion which has been produced in the operation, and in that degree which will show plainly the reduction of size of the most corrosible parts acted upon. If there has not been a chemical change in the elements of galvanism, there is no proof of the production of galvanic action, even in a development of most subtile character.

Since Mr. Brockway published his hypothesis on "*Galvanic action of metal in the mouth,*" I have had several opportunities for examining soldered gold plates which had been in use during a long time, and were brought to my rooms for alterations.

Among others there was one case of a plate which I made for the lady of the late Judge L****e, in 1829. The teeth were mineral and confined to the plate with soldered gold pivots; the springs embracing the two first superior molares were likewise confined to the plate with gold solder. Before polishing the plate, I reduced the projecting parts of the solder to a surface even with the plate, and when the whole was finished, it presented an appearance as if there had not been a perforation through the plate, or that solder had been applied. Twelve years constant use of this plate and its solder had elapsed when the lady returned to my room (being the third time after the teeth were inserted) I entered into a careful examination of the condition of the metals, and found that during that time there had not been so much corrosion of the solder as to have occasioned the loss of the least discoverable particle of its substance exceeding that from the surface of the main body of the gold. It had, however, become more dim than the plate; but when I had brushed the plate and solder on all their parts to an equal brightness, I could not discover that the solder had suffered in the least degree of chemical action beyond that which the plate had undergone.

Within a few weeks, a gentleman called upon me to set a mineral tooth, and make several corrections to a full set of teeth made in Doctor Flagg's room, in Boston. They are of fine workmanship, and had been in operation about two years. I paid particular attention to the state of the solder, and although I think it was not of as many carats fine as that mentioned in the first case, yet I could detect no farther chemical change than simply that the form of the solder showed itself by a slight tarnish, rather darker than the plates and springs. By the mere application of the brush and the common process for cleaning the plates, the whole oxidation was removed. I could not discover any greater decomposition or waste of particles of the solder than of the plates of gold.

Mrs. G. of Exeter, N. H. three years since employed an itinerant, who frequently stops in the vicinity of her residence, for the purpose of "*mending teeth and fixing in new ones.*" She applied to me lately and requested there might be an adjustment of the wires and plate of teeth which he set for her. On examination I found the plate and teeth pendent from the superior *bicuspides* with springs surrounding. The various metallic parts were held together by *silver solder.* The chemical result was that it had been changed to a dark hue and an evident decomposition had taken place on the surfaces of the various parts of the solder, which presented an appearance similar to silver which had been oxidized by being heated in contact with sulphur. When scraped with a steel instrument the particles thrown off appeared like plumbago.

I have here placed for consideration a few cases, of the many similar, which have come under observation in the course of my late practice. How, agreeably to the known principles of galvanism, Mr. Brockway, Dr. Mackall, and other intelligent practitioners in the profession, whose scientific acquirements and philosophical mode of reasoning would seem sufficient to enlighten the community of dental surgeons, on a subject which thus far has been treated in our profession, in a mere vague and opiniative manner, can suffer so important a branch of science to the cause of dentistry, as they deem galvanism to be, to pass without an explanation of its principles, and hold forth ideas without argument and inconsistent with the laws of nature; will talk of galvanic action producing *shocks, pains, decomposition of the teeth, absorption of the alveolar process,* and a host of miseries to be increased only proportionate with a galvanic excitement of the practitioner's notions; is what I understand no farther of, than that they ascribe to galvanism a power, which, with such elements as they mention, is increased more than six thousand times, in their descriptions of effects, beyond their capacities to prove by any philosophical experiment, or proved theory.*

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* That a galvanic action is produced by placing two or more different kinds of metal in the mouth, is to us, not only in strict accordance with the laws of galvanism, but is also supported by facts of almost daily occurrence. All, however, are not equally susceptible to, or conscious of its action, nor are results as pernicious as those represented by Mr. Brockway, often produced by it; and until some better method than that which he proposes be invented, we shall continue the present mode of attaching teeth to the plate. If the gold and the solder be sufficiently pure, and the necessary attention to the cleanliness of the mouth be observed, artificial teeth set upon plate, may be worn with impunity. Mr. Brockway's plan does not obviate the objection urged by him, for in attaching the clasp to the plate, solder must be employed, and furthermore, his method of securing the teeth to the plate is such as to afford no guarantee that they will remain for any considerable length of time.

ARTICLE VI.

Statistics of the Dental Art in Paris in 1828. From le traité complete du l'art du dentiste, par F. Maury, Paris. Translated by J. B. Savier.

We have thought that in the course of our work, it would be interesting to our readers to offer some statistical considerations of the dental art in Paris. This art has really made such a great progress within the last thirty years, that on considering all means employed for the health and cleanliness of the mouth, it produces an annual income (as we shall show) of about six millions of francs.

There were in Paris in 1790, only five dentists; in 1814 there were twenty; and in 1828 there were about one hundred and forty, which we will arrange into ten classes according to their annual receipts.

Classes.	Number of each Class.	Annual Receipts.	Total of each Class.
1	5	40,000	200,000
2	6	30,000	180,000
3	6	25,000	150,000
4	8	20,000	160,000
5	8	15,000	120,000
6	12	12,000	144,000
7	15	9,000	135,000
8	20	6,000	120,000
9	25	4,000	100,000
10	35	2,000	70,000

Total 140 who receive annually . . . 1,379,000 fr.

We can enumerate in the different districts two hundred dentists who make annually five thousand francs each, making a total of one million of francs.

The apothecaries, perfumers, mercers, and other merchants in

A more perceptible galvanic action is produced by filling different teeth in the same mouth with different metals. We have met with several cases similar to the one mentioned by Dr. Mackall, in a communication published in the first volume of our journal. It is seldom felt however, except in highly irritable dispositions.—*Balt. Ed.*

Paris and other parts of France, by vending powders, elixirs, opiates, and other things employed for the health and beauty of the mouth, receive annually an amount equal to that of the dentists of Paris and the districts, ... 2, 379,000 francs.

Now if we admit that out of thirty millions of inhabitants of France, there are five hundred thousand, who, regarding the cleanliness of their teeth, spend annually at least seventy-five centimes for a brush; we will then have another total amount of 1,125,000 francs.

Thus we find that the receipts of the dentists' of Paris, are

annually	1,379,000 francs.
that of those of the districts . . .	1,000,000
receipts of the apothecaries, &c. . .	2,379,000
do. merchants for the sale of brushes,	1,125,000
Total, . .	5,883,000 francs.

In supposing that out of this amount 630,000 francs are spent for operations that are indispensable, such as the extraction of teeth and other operations performed only by men of the art, and which come properly under the province of the surgeon; the dental art, exclusive of the surgical department, occasions an annual expenditure of nearly 5,253,000 francs. This result may appear surprising to some, but we warrant it to be as correct as these sort of calculations can be made.

ARTICLE VII.

Case of Alveolar Exostosis. By S. M. SHEPHERD, Surgeon Dentist, of Petersburg, Va.

A gentleman, about thirty-five years of age, called on me a few days since, desiring to have two artificial teeth inserted. As soon as he entered my office, I thought I perceived a want of a central incisor tooth. But upon examination, I found that the space which I had supposed was occasioned by the loss of a tooth, was between the superior central incisors, and that all the front teeth were present, including the bicuspides. The space was square and even, and presented exactly the appearance of the loss of a tooth, with this difference only, that it was in the centre of the mouth. My attention was then directed to the lower teeth, which I found precisely in the same condition. The space in this instance, was considerably wider, especially at the points of the teeth, which diverged a little, making it necessary to insert two instead of one. I have seen many cases in which the teeth have been forced apart by some unhealthy action in the gum sufficiently wide to admit of another tooth, and when the gum became healthy, the teeth retained the position into which they had been thrown; and in some cases I have inserted teeth where spaces have been thus produced; but I have never before seen a case in which the gum had always been healthy, that would at all admit of it. In some cases the removal of a supernumerary tooth in early life, leaves a space that fails to close up; and my first thought was, that such must have been the case in this instance but I was assured by the gentleman that no such removal had ever taken place.*

Suppression of Quackery in Canada.

That contemptible travelling quack, Williams, known as the great foreign *eye doctor*, and one of the grossest impostors, was bound over at Kingston, Upper Canada, a short time since, in the sum of £50, in two securities of £25 each, to appear at the next Court of General Quarter Sessions of the Peace, to answer to a charge of practising physic and surgery without license. The eye-afflicted citizens of Boston will remember this man as long as they retain a recollection of anything—for they were wofully duped. Quite an army might be collected in the different cities, on whose pockets the ex-oculist of the king of the French and the king of Belgium, wrought more tangible effects than on their diseased optics.

[*Boston Med. and Surg. Journal.*

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* Alveolar exostosis is by no means unfrequent in its occurrence, and is doubtless the result of inflammation of the alveolar periosteum—favoured by some peculiar constitutional idiosyncrasy. It is an affection in which the gums rarely participate. We have frequently known teeth to be thrusted nearly out of their sockets by it, and at other times to be forced asunder in the manner as described by Mr. Shepherd; the deposition of bone taking place in the one case at the bottom of the alveolus, and in the other only on one of its sides.—*Balt. Ed.*

Bibliographical Notices.

A Treatise on the Anatomy and Physiology of the Teeth, &c. &c. their diseases and treatment; with practical observations on Artificial Teeth, and rules for their construction. By David Wemyss Jobson, M. R. C. S., &c. 2d edition, London, 1835, pp. 270, 8vo.

The above work, although published six years ago, is but little known in the United States. It was our intention to have noticed it at a much earlier period, but the amount of other matter which we have had upon our hands, has compelled us to restrict our bibliographical department to such narrow limits, that we have been unable to do so. We shall for the future, however, endeavour to be more prompt in presenting to our readers, notices of, at least, all new publications relating to the teeth.

The object of the author of the treatise under review, seems to have been the instruction of the medical, rather than the dental practitioner. His opinions, for the most part, accord with those of Hunter, Fox and Bell. The doctrine of the non-vascularity of dental bone, as maintained by Hunter, he does not adhere to, but in other respects he differs from him but little. As to the literary character of his work, it is highly creditable, and besides, he seems to be familiar with the writings of most English authors on dental science. His strictures upon the use of the "anodyne cement," and "mineeral succedanea," that have been so much puffed by a certain class of dental empirics in Great Britain, are no less just than true, and were medical gentlemen generally, aware of the injury that results from this species of quackery, they would be less ready, than many seem to be, to aid, by commending to public confidence, every one who applies to them for recommendatory testimonials. To determine upon the merits of any description of dental practice, it is necessary to be acquainted with it, and to know its effects and the competency of the practitioner.

As there is nothing peculiar from other authors in Mr. Jobson's views concerning the anatomy, physiology and dentition of the teeth, we shall pass, without further remark, that portion of his work which is devoted to these subjects. They, as well as all the subjects embraced within his treatise, are treated on very briefly, and yet, sufficiently at length, to convey to the reader a good general knowledge of them. The brevity of his work then, may be regarded as a recommendation rather than as an objection, and the more especially as it is designed more for the general than the dental practitioner, whose other studies and professional duties, leave him little leisure for the cultivation of a branch of the profession, whose duties he is seldom, if ever, called upon to exercise. It is as necessary, however, that he should have a general knowledge of the physiological and pathological relationships that exist between the dental apparatus and other parts of our physical being, as it is for the surgeon dentist to be acquainted with the structure and diseases of the other parts of the body, and Mr. Jobson's work furnishes this information.

But while we in the main approve of the plan of the work, and coincide with the author in most of the views which he advances, we cannot assent to all. He has adopted some opinions so obviously erroneous, that we cannot allow them to pass unnoticed.

In treating on irregularities of the teeth, he says, "that a crowded condition of these organs will take place, 'notwithstanding every care on the part of the dentist,' in those cases where their dimensions exceeds those of the jaws. Now, this is a proposition to which we should be very reluctant to subscribe; and, we do not hesitate to allege, that, by timely and judicious care, any disposition to irregularity resulting from this cause, may be so overcome as to secure symmetry and regularity to the arrangement of the denture. The means that have, in hundreds of instances, been successfully employed for the prevention of the evil he condemns, and from the manner in which he speaks of them, we are disposed to think that he has had but little experience in this department of practice. The only successful plan that has ever been adopted, in cases of this kind, consists in the extraction of a tooth on each side of the jaw. This, if done at the proper time, will always enable the dental practitioner to procure for his patient a well arranged set of teeth, but to this practice, though the object be accomplished by it, Mr. Jobson objects. He says, "that the want of the teeth is always evident, and occasions a contraction of the jaws, which materially impairs the symmetry of the face." It may lessen the length of the circle of the alveolar ridge, we admit, but instead of "impairing the symmetry of the face," it has an opposite effect. Though two of the teeth, one on each side, be wanting, their absence will not, if the rest be correctly arranged, be observable.

The practice of filing the teeth with a view to remedy an irregularity, as recommended by some French and English writers, we conceive to be exceedingly objectionable. Thousands of teeth have been ruined by it, and not because the operation necessarily injures the organs, but because when performed for this purpose, the filed surfaces are soon brought in contact and afford a lodgment for morbid secretions and extraneous matter, which by being retained, exerts a destructive action both upon the enamel and dental bone; or, in other words, it causes them to decay. It is therefore, important that, when the teeth are filed for the removal of caries, that the operation should be performed in such a way as to prevent the organs from coming together, else it, instead of proving beneficial, will become a source of injury. It is an operation that is very often called for, and when correctly and judiciously performed, is of incalculable value.

Mr. Jobson, however, admits that there are cases in which extraction is called for, but he does not mention the teeth that are to be removed, but we infer from what he says, that the mal-placed organs are the ones which he would take away, and if we are correct in this, we must object to the practice. We will quote what he says upon the subject. "There are instances," says he, "indeed, as in the case of the upper canines, when they perforate high up on the anterior surface of the jaw, in which early extraction will be necessary." Now the proper practice in cases of this kind, (except the subjects be passed the eighteenth year of their age, when, in many persons, the deformity can only be removed by the extraction of the projecting cuspidati,) is to extract the first or second bicuspis on each side.

When the upper incisors come out behind the circle of the other teeth, the means which he employs to bring them forward consists of a gold bar passed round in front of the arch, with blocks of ivory, as recommended by Mr. Fox, attached to each end so as to interpose between the teeth and prevent them from coming together. The gold bar, he says, is an invention of Mr. Hunter. If Mr. Jobson had been conversant with French authors, he would have discovered that Mr. Hunter was not entitled to the credit of the invention of this instrument. A drawing of it may be seen in the "Recherches du Dentiste," by Bourdet, vol. 2, between the 18th and 19th pages, and this work was published 1757, fourteen years before the publication of the first part of Mr. Hunter's treatise on the teeth, and twenty-one years before the publication of that part in which he treats on irregularity. But even this instrument will not, in those cases where any of the upper incisors have come out so far back as to fall behind or on the inside of the lower, enable us to bring them forward without the interposition of blocks of ivory, or some other substance, between the back teeth. Gold caps, for the last fifteen or twenty years have, been substituted. They are more convenient, and are in many other respects decidedly preferable. M. Delabarre, a French dentist and author of considerable celebrity, recommends the placing of a gold grate, made of wire, over two of the lower molares, but there are many cases, in which this would not keep the teeth sufficiently apart.

It sometimes happens, that the lower incisors shuts over the upper, and to prevent which, Mr. Jobson employs a kind of guttered plate, similar to the one described by M. Duval, and M. Catalan. This is a most excellent method, the lower teeth can, with very great facility, after the extraction of one on each side, be carried back by the aid of this fixture, and latterly we have been induced to employ it for moving upper front ones that stood within the the circle, forward. There are many cases in which we prefer it to any other means that have been recommended.

In treating on caries of the teeth, he advocates the doctrine that the disease is the result of inflammation of the bony tissue of the organs, but uses no arguments that have not before been advanced in its support. He quotes the explanation, given by Mr. Bell, of the cause, as fully expressive of his own views upon the subject. But, of the importance of cleanliness of the teeth, he seems to be fully aware, and very properly recommends it; but at the same time, he very justly condemns the use of acid dentifrices, so much employed by "empirical practitioners," with a view to impart to the teeth a temporary whiteness. The injury produced upon the teeth by this description of quack nostrums is incalculable.

The absurdity of the doctrine, advocated by Mr. Jobson, of the decay of the teeth, has been so frequently shown, that we do not deem it necessary to say any thing more upon the subject. The more rational and philosophical explanation, that the malady is the result of the action of solvent agents, we are gratified to believe, is fast gaining ground.

Among the remedies recommended by the author for tooth-ache, we shall notice but one, and that is the nitrate of silver. Of the caustics, this he conceives to be the best. The nitrate of silver will sometimes succeed in destroying the lining membrane and ganglion of a tooth, but it is a very uncertain remedy, and its application is always followed by a great augmentation of pain, and the irritation produced by it not unfrequently extends to the alveolar periosteum and gums. The only caustic that has been used with complete success, is arsenic; and the profession are greatly indebted to Dr. Spooner, of Montreal, and his brother, Dr. S. Spooner, of New York, who were the first to recommend it in this country. We were somewhat sceptical at first concerning its effects, but having employed it in some two or three hundred cases, we no longer feel any hesitation about recommending it is as an infallible remedy. Different practitioners are in the habit of applying it differently. We have ourself used it combined with various articles, but the preparation which we prefer, both for convenience and as giving less pain to the patient, is the following: arsenic and acetate of morphine, each one grain, mix and divide into twenty parts, upon a particle of raw cotton about the size of a pin's head, or a little larger, previously moistened in water, we absorb one of these powders, and after drying the cavity in the tooth, apply it to the exposed ganglion. This done, we fill the cavity with yellow wax. The application is rarely followed with much pain, and when it is, it seldom continues for more than from three to five hours, and when made directly to the ganglion, or pulp, within the cavity of the tooth, a second application is never requisite. We have been in the habit of applying it one day, and plugging the tooth the next.

Exostosis, necrosis, fractures, and dislocations of the teeth, salivary calculus, and the diseases of the gums and alveolar process are treated on in the fifth, sixth, and seventh chapters of the second part of Mr. Jobson's work. After which a chapter on the diseases of the maxillary bones follows, and then another on neuralgia of the face. Not observing any thing peculiar in what the author's says concerning these maladies, we pass them without comment.

Surgical and mechanical dentistry constitute the subjects of the third and fourth parts of the treatise, and it is to be regretted, that the author has not described more at length the various manipulations pertaining to them. No one can obtain sufficient knowledge from the brief description which he has given of the operations belonging to dental surgery, to enable him to cleanse, file, plug or insert a tooth in a proper or scientific manner. Operations upon the teeth, to be valuable, must be well performed, and no one can perform them well who is not thoroughly acquainted with all their minutia. So far as Mr. Jobson has made known his views of practice, we have little fault to find with them. We, however, object to the names by which he designates some operations; for example, that of plugging the teeth, he calls stuffing; filling, stopping or plugging; we should have greatly preferred, but as we are not disposed to be over fastidious about names, we shall proceed, without further comment upon them, to notice two or three more passages, and conclude our remarks upon his work.

With the directions which he lays down, for the preparation of a cavity in a tooth, previously to filling, we are pleased.

He says, "In excavating the cavity, although it is necessary to clean away the whole of the diseased structure, and it is desirable to make the interior of the opening as equal as possible—yet it should be the study of the operator to avoid removing any of the sound part of the tooth, with the view of rendering the space wider beneath than it is at the surface."

Many practitioners, though not almost every one as Mr. Jobson says, recommend that the cavity should be made larger at the bottom than it is at the opening. It is by far more difficult to fill a cavity thus formed, than when it is all the way of a size, and when it is considerably larger at the bottom than it is at the opening, it cannot be well filled. This is one of most difficult operations in dental surgery, and requires more judgment and skill in its performance than any other. Very few, comparatively, have arrived to a high degree of excellence in this department of practice.

The author's remarks upon the materials most proper to be employed for filling teeth, are deserving of especial notice. His views upon this will be found to accord with those of the most scientific and skilful practitioners of the day.

"Of all the materials" he observes, "that have been employed for this purpose, gold leaf, the most ancient, is still incomparably the best, as it is not only the purest of all the metals, but is possessed of the highly valuable property of undergoing no change in the mouth, where almost every other metallic substance is affected. Platina, the more recently discovered metal, and inferior only to gold, it is true, forms an exception to this remark; but it is rarely to be found in a state of purity, and is even then possessed of much less ductility than gold is."

To the filing of the teeth, an operation, which, in the treatment of caries on their lateral surfaces, is of inestimable value, he gives but about one and a half pages. That he should have passed with so few remarks, an operation that is of so much importance, is, to us, a matter of surprise. The directions which he gives upon the subject are comprised in about half a dozen lines, and they are too general to be serviceable as a guide to the practitioner. The following is pretty nearly all he says concerning the operation.

"In the first stages of the disease," (caries upon the lateral surfaces of the teeth,) "the operation requires but little ingenuity, as it is merely necessary to make a small space, by passing a smooth file between the teeth. But when the caries is more extensive, considerable care is requisite to effect the removal of the diseased part without materially altering the outward aspect of the tooth."

Now what are we to understand, "by passing a smooth file between the teeth." If we are to place no other construction upon the words than their literal meaning, we unhesitatingly pronounce the practice a bad one, for by that simple operation no protection whatever will be afforded to the teeth against decay. The disease would be favoured by it rather than otherwise. Though the caries be removed, the teeth will soon come together, and thus a lodgment, as we have before stated will be afforded for extraneous and impure matters, and the disease be again speedily produced. When teeth are to be filed, the operation should be so performed as to prevent the approximation of the organs.

Tying teeth that have become loosened in their sockets, from the use of mercury, or any other cause, with a ligature, with a view to prevent them from moving, is a practice, which, we are sorry to find, he recommends. It is unscientific, and highly reprehensible. Although they may for a time be kept somewhat steadier, a cure of the disease in the gums and alveoli can never be accomplished, while teeth which require this kind of artificial support, are permitted to remain in them. If then we would prevent an extension of the evil, we should advise their removal at once.

The instruments employed by Mr. Jobson, for the extraction of teeth, are the key, forceps, punch, and elevator. In most cases he gives the preference to the forceps, but says there are cases in which a resort to the key must be had, and repeats what Mr. Bell says about those who are loudest to condemn this instrument, that they have a secret recourse to it. We are not surprised that he should think so, nor would any one be, who would take the trouble to look at the drawings of the forceps which he has given. They are such clumsily and badly contrived things, that really we should hardly know how to proceed to effect the evulsion of a tooth with them. The difficulty in extracting teeth with forceps, has been the want of such as were properly constructed and adapted to the purpose, but that is now obviated, we have them now with which any tooth can be removed, and with less injury to the alveoli and gums, than is inflicted with the best constructed key instrument now in use, and with less physical force. If there are any who are yet sceptical upon this subject, we say to them, if they will supply themselves with forceps suitable for the purpose, and use them exclusively for six months, our word for it, they will never go back to the key instrument. We have given both a fair trial, and therefore speak from experience on the subject.

The origination of the barbarous operation of transplanting teeth from the mouth of one person to that of another, Mr. Jobson, ascribes to Mr. Hunter. It is surprising that most English writers on the teeth attribute the invention of this operation to Mr. Hunter, when it was performed in France about two hundred years before he was born.

Since the time of the publication of the work under review, the improvements in the manner of inserting artificial teeth have been so great, that we do not think it necessary to notice that part of it which is devoted to this branch of the art. The directions given upon this subject, so far as they go, would have answerd at that time, and some of them are applicable even now. In this department of the profession, Mr. Jobson was well informed.

In conclusion, we can only say, that though some of the doctrines maintained by the author, do not accord with established facts, and sound philosophy, his treatise as a whole is creditable, and if not intended for the surgeon dentist, is certainly well worthy of a place in his library.—*Balt. Ed.*

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Every Man his own Dentist. The art of preventing the loss of the teeth, familiarly explained; with a description of the siliceous pearl teeth which never wear out, change colour, nor become offensive. Also, of the Tooth Renovator; being a new and improved system of supplying deficiences without extraction, &c. By Joseph Scott, Surgeon Dentist. London, 1838, pp. 120, 8vo.

If any other evidence, than that which is to be found in the title of the above named work, was wanting to establish its character, it may be found on nearly every one of its pages. We can regard it in no other light than as an advertisement, as a fulsome self-eulogy—a laboured effort on the part of the author to bring himself professionally into notice. His own excellence as an operator, the superiority of his plan of treating the teeth, and that of the artificial teeth employed by him, constitute the burthen of his remarks. And as it would seem fearful that his own statements would not be believed, he bolsters them up with approbatory certificates of what he calls, his *siliceous pearl* teeth. Now he may for ought we know, manufacture good porcelain teeth, but that he is a scientific or skilful practitioner, the exposé which he gives of his plan of practice, evidences very conclusively to our mind that he is not. His work savours very strongly of empiricism from beginning to end. For example, in preparing a cavity in a tooth for filling, the following is his description of his manner of doing it.

"The points" says he, "to be attained in excavating a tooth, are, first, to preserve the edges of the enamel round the cavity; secondly, to hollow it out in such a manner that the *stopping, when in the cavity, should assume, as much as possible, the shape of a cone, the broad end being downwards*; thirdly, great care should be taken that a thin portion of the bone substance of the tooth (*even if decayed*), should be left to support the enamel; otherwise, the points of crystallization will inevitably break in."

Now any one at all acquainted with, or skilled in the art of filling teeth, knows that a cavity thus prepared cannot be thoroughly and effectually filled. The article which he employs for stopping teeth, is a "composition cement," known only to himself. Nostrum-mongers, in any of the departments of medicine should be looked upon with suspicion. A practice which is incapable of bearing the test of rigid scrutiny, is not entitled to confidence, and yet it has ever been the case, that there were not wanting those who were always ready to patronize quackery. The ignorance of the author, however, of the present treatise, is so palpable, that it would be difficult for him to deceive any except the most credulous and unsuspecting.

For the amusement of our reader we will quote one or two other passages. "It not unfrequently happens," says he, "that front teeth (owing to their thinness or want of cavity) are not capable of being permanently stopped. In such cases the only plan is to remove the diseased part, as before stated, which may be done without danger of injury, and stopped with the anodyne cement until they are no longer unsightly, when a renovator may be worn, or the remainder of the crowns may be cut or filed off and grafted."

The renovator of which he speaks consists of a cap, porcelain we presume from the description given of it, fitted to the crowns of one or more teeth, as the case may require. The effects that would inevitably result from covering the teeth in this manner are too palpable to need explanation. A depository is thus at once formed for putrescent matter and morbid secretions, whereby the complete destruction of the enclosed organs must be speedily effected, and the breath rendered more or less offensive.

Again, in speaking of the treatment of caries, he remarks, "when gangrene or caries attack two adjoining teeth, the difficulty of stopping both may sometimes render it necessary to extract one to save the other."

We pity those who have had the misfortune to be his patients, and for humanity's sake, would fain hope, that he has been less successful in making dupes than many of the empirics with which the profession is infested. That his work should have passed through five editions, we can only account, by supposing that he has used it for the purpose for which it seems expressly intended; namely, as an advertisement. If the people in England can be imposed upon by such downright and barefaced charlatanism, we can only say, that it is high time they should institute some test of professional qualification, that will guard them against the impositions, to which they, as well as those of most other countries, are daily exposed.—*Balt. Ed.*

On the Origin and Development of the Sacs and Pulps of the Human Teeth.

By JOHN GOODSIR, JR. Surgeon, Anstruther, Fifeshire.

IN the January number for 1839, of the "Edinburgh Medical and Surgical Journal," is an able and well written paper on the above named subject by Mr. GOODSIR, who has succeeded in discovering the rudiments of the teeth at a much earlier period than has been done by any former odontologist. He is of the opinion that they originate from mucous membrane, and that those of the secondary set, have no connection with the first. "Dentition," he says, "commences by the formation of the primitive dental groove, on the floor of which the rudiments of the pulps of the milk-teeth appear as globular or conical papillæ; septa afterwards pass from the outer to the inner side of the groove, between the papillæ, and thus each of the latter becomes situated in an open-mouthed follicle, which is the primitive condition of the future sac." He also tells us, that the germ of the first superior temporary molaris is the first of the rudiments of the milk-teeth that appears, and that this is discoverable some time between the sixth and seventh week of embryonic life. "It is at this period," says he, "a simple, free granular papilla, like many others on the surface of the mucous membrane and skin." Anterior to this, and in the same jaw, at about the eighth week, he has succeeded in discovering a second papilla, which is the germ of the cuspidatus or canine tooth.

The ridge within which is the groove that contains these papilla, advances in an "indistinct manner to the median line, during the ninth week," and on each side of this line, "an oblong papillæ with a notched lamina in front of it, and immediately afterwards another smaller papillæ, external to the former; these last papillæ," says he, "are the germs of the incisive teeth, and are placed in connection with the inter-maxillary system." The progress of the incisive papillæ during the tenth week is slow, "their anterior laminæ only increasing somewhat in size." From the sides of the groove within which the germs of the primitive teeth are situated, processes shoot across and come together before and behind the rudiment of the first temporary molaris, enclosing it in a follicle, through the opening or mouth of which the papilla is observable. A like follicle is slowly formed around the germ of the cuspidatus. At about this period, the germ of the second primitive molaris, shows itself in the form of a small papilla, at the side, and seemingly "a production of the rounded lobule, which terminates posteriorly to the outer ridge." The papilla of the incisores advance constantly during the eleventh and twelfth weeks, and septæ pass between them during this time, so that they become sunk as it were, each in a separate and well defined follicle. The germ of the anterior molaris undergoes but little apparent change, while that of the posterior enlarges, and by the gradual folding of the terminal lobule, which the author describes, becomes situated in a follicle like the other papillæ. Behind this, the primitive groove extends itself a short distance, within which the first permanent molaris first shows itself.

During the thirteenth week, the follicle of the second milk molar becomes more fully developed, and the rudimentary papillæ of the other teeth begin to assume the forms of the crowns of the teeth which they are respectively to form, the papillæ grow faster than the follicles, and protrude slightly from their mouths; the follicles however increase, so as soon to enclose the germs of the teeth, and thus become their matrices or sacs. From the time the matrices close, the papillæ of the first teeth become gradually moulded into the shape of the teeth that are formed from them. As the formative process goes on, "each branch of the dental artery, as it arrives at the fundus of its destined sac, sends off a number of radiating twigs, which run in the substance of the cellular submucous tissue, (which constitutes the outer membrane of the sac) towards the gum, from which others proceed to inosculate with them. By "the combined twigs" of these, the true membrane of the sac is minutely ramified, while not the smallest fillet is sent to the granular substance. After sending off these, the dental branch "divides into a number of contorted ramifications between the base of the pulp and the sac, which from smaller ramuscule are transmitted to the pulp itself." In the meantime, the germs of the first secondary molares are formed together with their follicles, within which they have become completely inclosed, and granular matter deposited within their sacs; the edges of the walls of the groove of these teeth adhere, but the walls themselves do not, by which a cavity of some size is left below the tooth, "or between it and the gum." "This cavity," says Mr. GOODSIR, "is a reserve of delicate mucous membrane," and from which the materials for the second and third permanent molares, are furnished.

He denies, as we have before remarked, that the permanent teeth have their origin from the temporary ones, and contends that they, like these, have their origin from mucous membrane, having no connection with the others whatever. His researches have been conducted upon an extensive scale, and certainly throw much new and valuable light upon this department of odontology.—*Balt. Ed.*

☞The foregoing notice was furnished to the editors of the Maryland Medical and Surgical Journal, from which publication it is copied.—*Balt. Ed.*

* * *

Three Memoirs on the Development and Structure of the Teeth and Epithelium: Read at the ninth Annual Meeting of the British Association for the encouragement of science, held at Birmingham, in August, 1839; with diagrams exhibited in illustration of them. BY ALEXANDER NASMYTH, F. L. S., F. G. S., Member of the Royal College of Surgeons, &c. LONDON, JOHN CHURCHILL, 8vo. pp. 47, 1841.

WHEN we saw the publication of these memoirs announced, in the "*Boston Medical and Surgical Journal,*" we were of the opinion that they constituted the treatise upon the development, structure and diseases of the teeth, promised by the author about two years ago, and in our last number spoke of it as such. In this, we were disappointed,—the long expected work is yet to come. Mr. Nasmyth is not only an able writer, but he is a close investigator, and his researches in this department of minute structural anatomy; have thrown much new and valuable light upon it.

We should be glad to notice the foregoing memoirs at length, but having only just received them, our time will not at present permit us to do so. We, however, copy the following, which will enable the reader to form an idea of Mr. Nasmyth's peculiar views on the structure of the teeth, taken from the *London Lancet,* from the "Boston Medical and Surgical Journal."
Balt. Ed.

"Our readers are aware that a tooth consists of three substances: of *enamel,* which forms a thin crust over the crown; of *ivory,* or tooth bone, which constitutes the chief bulk of the tooth; and of *cementum,* or crusta petrosa, which invests the root of the tooth, and under certain circumstances forms a thin lining to, or completely fills up the cavitas pulpæ. The ivory or tooth-bone consists of fibre-like, undulating tubuli, which traverse a dense, interfibrous or intertubular substance. The intertubular substance has been described hitherto by our best anatomists, among whom may be named Perkinje, Retzius, and Muller, as uniform and structureless. But Mr. Nasmyth is "disposed to believe that it is not only organized, but differently and characteristically so in different animals, as to be capable of affording valuable aid to the naturalist in classifying the animal kingdom." According to Mr. Nasmyth, the producing structure of the ivory, viz., the pulp, "is cellular throughout its entire structure;" the producing structure of the enamel, viz., the internal surface of the capsule, is also cellular; and the ivory and the enamel which are formed by a transformation of the pulp, and of the internal surface of the capsule, bear distinct traces of the cellular texture of which their basis is composed.

This important discovery, the originality of which cannot, we believe, be questioned, was made by Mr. Nasmyth in the inverse order to that which we have adopted in describing its nature.

"My attention," the author observes, "was first drawn to the structure of the interfibrous substance on examining a delicate section of the fossil tooth of a rhinoceros, by the aid of a very high magnifying power, of one-tenth of an inch focal distance, and of the most perfect kind, with an achromatic condenser of light. The instrument with which I have conducted my researches, and upon the accuracy of which I place the greatest reliance, is that of Mr. Powell. In the section of the tooth of the rhinoceros to which I have just alluded, will be observed an appearance of cells or compartments;" an appearance which the author's subsequent investigations proved to be universal both in fossil and in recent teeth.

Mr. Nasmyth has also made researches into the structure and composition of the tubuli, which that gentleman terms "fibres," of the teeth of different animals. These he finds to

"Present an interrupted or baccated appearance, as if they were made up of different compartments—an obvious concomitant of the cellular structure of the interfibrous material. The size and relative position of these portions or divisions of a fibre differ in various series of animals. In the human subject, for instance, each compartment of the fibre is of an oval shape, and its long, small extremity is in apposition with that next adjoining. The long axis of the oval corresponds with the course of the fibre. In some species of the monkey tribe, the fibre appears to be composed of two rows of compartments parallel to each other. In the orang outang the fibre is composed of rhomboidal divisions, and in the baboon they are oval, like those of the human subject, and the surfaces of the long axes are in apposition. In fact, each class of animals seem to have a distinct characteristic appearance, but all are similar in respect to the general baccated appearance."

Of the application of his views to practical purposes, the author remarks:—

"All systems of dental structure which have hitherto been propounded have failed, I think, to explain facts of daily occurrence; but they may be accounted for, I venture to assert, by the cellular organization of the interfibrous substance which has been improperly termed structureless, and by the peculiar baccated arrangement of the fibres.

On the structure of the enamel, we read the following:—

"According to the views of Retzius, Perkinje, and the recent investigators of the structure of the teeth by the aid of the microscope, the enamel consists of fibres, running in a direction from the centre to the circumference of the tooth. On making a section of the enamel in a direction parallel to the transverse diameter of the tooth, the appearance as described by these writers is observed, and they are said to be seen to terminate in a hexagonal form beneath the investing crusta petrosa. If, however, a different section of the enamel of the human tooth be made, for instance, one near the surface, parallel to the vertical direction or long axis of the tooth, an appearance presents itself which has induced me to take a different view of the nature of the structure of the enamel. The section of the enamel presents compartments or divisions, but of a different character from those I have already spoken of as existing in the interfibrous structure of the ivory. Each compartment of the enamel is of a semicircular form, and the convexity of the semicircle or arch looks upward towards the free external portion of the tooth."

An Appeal to Parliament, the Medical Profession, and the Public, on the present state of Dental Surgery. By George Waite, Esq. Surgeon Dentist, M. R. C. S., &c. London, Highley & Co. pp. 29, 8vo. 1841.

The object of the author of this "appeal" is to obtain the passage of a law requiring of those exercising the duties of the dental surgeon, to undergo an examination before a Board, to be appointed by the Royal College of Surgeons. We heartily wish him success in this most laudable undertaking, and we are gratified to learn that our professional brethren in England are begining to be awakened to the importance of reform in this most important department of the curative art. We sincerely hope the respectable part of the profession there will cordially unite in this praiseworthy undertaking, and go about the matter in good earnest. Reform is loudly called for; the usefulness and respectability of the profession require it, and unless some test of qualification is instituted, the community must and will continue to suffer from the abuses which are at present so extensively practised. The efforts that are making in the United States, for the advancement of dental science, promise the most happy and salutary results, and we would suggest to our brethren in England, while attempting to better the condition of the profession there, by excluding from its practice all except such as are qualified, the propriety of furnishing the requisite facilities for instruction in those branches of knowledge, which it is essential for the dental surgeon to possess, to enable him to exercise the duties of his art in a skilful and scientific manner.—*Balt. Ed.*

The Gums; with late discoveries on their structure, growth, connections, diseases, and sympathies. By George Waite, Member of the London Royal College of Surgeons. London, 1835.

It is not perhaps generally known by the dental profession, that the work, bearing the above title, has been republished in this country. It constitutes one of the series of Dr. Bell's "*Select Medical Library,*" and was published by Messrs. Haswell, Barrington and Haswell, Philadelphia, in 1838. We mention this, because the work is one of value, and that our professional brethren may know where it can be had.

The structure, diseases, &c. of the gums, are treated on by Mr. Waite in a very able manner, and more at length, than by any preceding writer on the subject. It is a work which every surgeon-dentist should have, and had we the time we should be glad to give a more extended notice of it, but as we have not, we must be content with thus merely inviting the attention of the profession to it.—*Balt. Ed.*

Recent Publications.

On the Structure, Economy, and Pathology of the Human Teeth; with Instructions for the Preservation and Culture; and concise description of the best modes of surgical treatment; equally adapted to the uses of the medical practitioner, the student in medicine, and of the public. By William Lintott, *Surgeon, Surgical and Mechanical Dentist, with upwards of forty illustrations.* London, John Churchill, pp. 114, 18mo. 1841,

The Structure, Diseases, and Treatment of the Teeth considered; with a view to the abolition, in all common cases, of the pernicious practice of tooth-drawing. By William Wardroper, M. R. C. S., of London, &c. London, Henry Renshaw, pp. 59, 8vo. 1838.

Advice on the Care of the Teeth. By Edwin Saunders, Dentist, &c. London, Thomas Ward, pp. 107, 18mo. 1837.

Preservation of the Teeth indispensable to comfort and appearance, health and longevity; being a second edition of Dental Practice. By John Gray, *Consulting Dentist,* M. R. C. S. L., &c. &c. London, 1840. 32mo. pp. 77.

Manuel Pratique de l'art du Dentiste, par Lefoulon, Paris, 1841, 8vo.

Miscellaneous Notices.

Baltimore College of Dental Surgery.—Pofessor H. Willis Baxley, M. D., by whom the chair of Special Anatomy and Physiology in this institution, was so ably filled during the first course of lectures, resigned his connection with it about three weeks previous to the commencement of the second, and W. R. Handy, M. D., adjunct professor of Anatomy and Physiology in the Washington University of Baltimore, was elected to the vacancy occasioned thereby. In retiring from the institution, Professor Baxley, takes with him our sincere regards. As a lecturer and teacher of anatomy he ranks among the very first in this country. His abilities, however, and high professional attainments are well known and too highly appreciated to require any commendation from us, and while it is a source of deep regret that his official connection with the college has been interrupted, we cannot withhold an expression of gratification that it has not proceeded from any want of interest or confidence in the success of our enterprise, but from the imperative demands upon his time resulting from arduous professional duties. But, while we thus regret the loss of Professor Baxley's valuable services, we are happy to announce that his place has been filled by one eminently qualified to discharge its duties.—*Balt. Ed.*

Catalogues of the Members of the American Society of Dental Surgeons, may be had, neatly printed, on paper or parchment, by application to either of the editors of this journal.

Mr. Whitewood.—It is stated by Mr. George Waite, in his "Appeal," that Mr. Whitewood, formerly an eminent dental surgeon of Old Burlington street, London, went from America eighty years ago, and that he was the preceptor of his father, Mr. John Waite, by whom he was succeeded in practice.

Dental Works in Progress.—We understand that Dr. W. N. McKinney, surgeon dentist of Fredericksburg, Va. is preparing a popular treatise on the management of the teeth, and that it will soon be put to press. Dr. McKinney is a very ready writer, and knowing which, we hope that it will not be long before his promised work makes its appearance.

We have also been informed, that Dr. Pleasants, dentist, of Richmond, Va. is engaged in the preparation of a work on the science of the teeth, and that he contemplates very soon, to have it published.

Anomalous Dentition.—A young lady, Miss G. of this city, aged about sixteen years, called a few days since, to consult us concerning her teeth. She had in her upper jaw the two permanent central incisors, the two bicuspides on each side, the two permanent molares, and the temporary cuspidati, one on each side. The temporary lateral incisors had been extracted about three years before, and from the thinness of the alveolar ridge, from where they were taken, will probably never be replaced with permanent ones. The temporary cuspidati are quite loose, and have been so, as we were informed, for nearly two years, and from the examination which we made, we are inclined to believe that they will never be succeeded by others. Her lower temporary teeth were all shed at the proper time, and replaced by others.

We mention this anomalous case, not because similar ones have not occurred, for they are occasionally though rarely meet with, and some five or six have fallen under our own immediate observation, but as showing that nature

in the production of these organs, as well as in many of her other operations, does sometimes depart from her established course, and as one, which, though of no practical value, must nevertheless be interesting to the physiologist.
Balt. Ed.

Dr. E. B. Gardette and the American Society of Dental Surgeons.—We put ourself to some inconvenience to publish the following communication from Dr. Gardette. We really think that he has taken an improper view of our conduct in the matter complained of, and in proof of this, we refer our readers to his own statement. It will be seen that Dr. Gardette was regularly elected a Vice-president of the American Society of Dental Surgeons, and regularly notified of the fact. At the same time he was informed that the proceedings of the Society, and of course his own election, would be published. Dr. Gardette did not then decline the office, nor object to the publication of his name, but, as he states, he "delayed answering the letter (informing him of his election) until he should have received the Journal, and duly considered the character of the meeting and proceedings referred to." Of course, then Dr. Gardette expected to see his name announced as one of the vice-presidents of the society; he would have been surprised and doubtless offended, if it had not been so; and yet he declares that his mind was not made up about even the character of the meeting in question! Unquestionably, Dr. Gardette's silence was a tacit acceptance of the office, and his subsequent letter could only be considered as a *resignation.* This, the society accepted as soon as it was tendered, but they did not think it necessary or important to publish his letter.

We have no unkind feelings towards Dr. Gardette, and if he thinks the publication of his letter necessary for his vindication, we are willing to oblige him, but we think he has had no reason for charging us with any improper conduct in the matter.—*Balt. Ed.*

To C. A. HARRIS, M. D. *Corresponding Secretary of the American Society of Dental Surgeons.*

DEAR SIR: *Philadelphia, November,* 1841.

It is with some reluctance, and yet as an act of justice to myself, that I adopt this public mode of expressing my views of the course pursued towards me by "*The American Society of Dental Surgeons,*" and yourself, as its corresponding secretary. I have been, I think, very patient in affording abundant time for an act of ordinary justice and civility at the hands of the society or its official organ, by giving *the same publicity to my non-acceptance of the office of vice-president, as was extended by them to my unsolicited election to that post.* I trust therefore you will excuse me for requesting the publication of your official communication to me dated August, 1840, with my reply, and this explanation of the circumstances under which I do so.

"*The American Journal of Dental Science,*" of which you were an editor, has given to the public the proceedings of your society in New York, and my name being there mentioned as a vice-president, I naturally supposed the same journal would have announced the fact of my non-acceptance. This however was not the case, and I then looked to the next meeting of "*The American Society of Dental Surgeons,*" which took place in August, 1841, as the proper time for action in the matter, and expected of course that my refusal would be found in the then published proceedings. In this expectation I have again been disappointed: The first number of "*The American Journal and Library of Dental Science,*" just received, contains "*Extracts from the Transactions,*" of the second meeting of the society held in August last, and also the new organization of its officers; and although my name, it is true, does not again appear, I find no notice of the fact that I had *voluntarily* declined the office of vice-president immediately on my election. This simple statement would at least have made it appear to my friends abroad, that I was not a candidate for such distinction at the second election.

I take this occasion to say publicly that I never had the pleasure of being present at a meeting of the above named society, nor at the convention in New York, for its organization, and that I never authorized any one to represent me on either occasion.

I am very respectfully, your obedient servant, E. B. GARDETTE.

[COPY.]

DEAR SIR: *Baltimore, August,* 1840.

The "American Society of Dental Surgeons," at a meeting held in New York, August 18, 19 and 20th, after the adoption of a constitution and by-laws, elected you one of its vice-presidents. The proceedings of the society together with its constitution and by-laws, you will receive in the next No. of the "American Journal of Dental Science," which will be out in a few days. With sentiments of respect, &c.

C. A. HARRIS, *Cor. Sec. of the Society.*

DR. E. B. GARDETTE.

[REPLY.]

DEAR SIR: *Philadelphia, September,* 1840.

Your favour of August twenty-seventh, was duly received, announcing that the "American Society of Dental Surgeons," at a meeting held in New York, had elected me one of its vice-presidents. Your accompanying promise, that the proceedings of the society together with its constitution and by-laws would be published in the coming number of "The American Journal of Dental Science," induced me to delay answering your letter, until I should have received the journal, and duly considered the character of the meeting and proceedings referred to.

I now beg respectfully to tender to the society, through you as its proper organ, my resignation or rather *non-acceptance* of the office of vice-president, and the privilege of an active member of the society with which it has honoured me without my consent.

My thanks are due to you individually for the polite interest you have manifested that I should take an active part in the organization of this society; but being unable to attend the meeting at New York, I had hoped that the character of my reply by letter to you in June last, as well as my views previously expressed in conversation at my house, would have led you to conclude, that a society, formed as this has been, could never receive my sanction, much less induce me to accept a prominent post in it.

You will be good enough to communicate to the society, my non-acceptance of the office of vice-president, and of an active member.

I am very respectfully yours, &c. E. B. GARDETTE.

To DR. C. A. HARRIS, *Cor. Sec. Am. Soc. of Dental Surgeons.*

Plugging Teeth.—This is one of the most important, and at the same time, one of the most difficult operations in dental surgery; and it is an operation, in the performance of which, comparatively, few have attained to a very high state of excellence, and knowing this, it is to us a matter of surprise that it is so frequently entrusted to individuals of questionable skill. The operation unless well performed, is an injury instead of a benefit to the teeth, and it is as essential that the material employed for filling, be such as will resist the action of the agents to which it has necessarily to be exposed, as that the operation be skilfully gone through with. Many articles have been used for filling teeth, but all experienced and skilful practitioners concur in opinion that gold is the only one that can in all cases be depended on, and yet, there are not wanting those, who, through ignorance of the subject, or with a view to deceive, will assert to the public that an amalgum of crude mercury and silver is greatly preferable.

We have been led to these remarks by several cases of imposition of this kind that have recently come to our notice, and for the purpose of showing how easy it is for an individual to be imposed upon by this species of quackery. As an example, we will mention the case of a lady, Mrs. M. of this city, who called upon us a few days since to obtain our professional services. She had several decayed teeth which she wished to have filled, and inquired, if we could do it with "*cement*," stating at the same time that she had had three teeth filled with it about ten months before, and that she preferred it to any other article, inasmuch as it had remained in them securely ever since. On examining the teeth which had been filled, we found the "*cement*," as she designated it, though much oxidized, still in them; the decay however was not arrested, but had gone on, notwithstanding the "*cement*," fillings, and had committed such devastations upon the teeth, that their preservation was rendered almost hopeless.

This is not a single case, we could mention very many others similar to it, but it is sufficient to show that even the remaining of a plug in a tooth is no evidence that the tooth is in a state of preservation. It is an easy matter to fill some cavities in teeth, and especially such as are larger at the bottom than at the opening, so as to prevent the fillings from coming out, but to fill them so as to effectually arrest the further progress of the decay, is quite a different, and by far, more difficult thing. That it can be done, experience has demonstrated beyond all question or doubt, but so far as our own observations extend upon the subject, and we have taken some pains to inform ourself concerning it, dental caries can seldom if ever be perfectly arrested with any of the *metallic* or *tero metallic* "*cements*," that have as yet been employed. We have seen many teeth that were filled with one or other of these preparations, but do not recollect to have ever met with one that had been thus treated, in which the decay was not still going on, and the gum around it, not in an obviously unhealthy condition.

The employment of this description of articles for filling teeth, we are induced to believe, from what we can learn, has been more general in England than in this country, and the injury that has there been produced by it, has been so great, that it has become necessary to denounce the practice in the public newspapers; and in consequence of which, many from the hordes of dental charlatans that have there for the last five or six years, been practising upon the credulity of the unsuspecting, have been compelled to seek other fields for the exercise of their vile imposition. New York, we understand, has recently been honoured with a visit from one of these notorious impostors, who recently figured very conspicuously in a London police office.

But, this is an inventive age, and among the inventions by which it has been characterized, those for deceiving, have fully kept pace with those that are useful and beneficial. The world seems so fond of novelties, that it is only necessary for a person to proclaim a new discovery, to find enough ready to test its value, no matter at what risk or expense, and though they be deceived a dozen times, appear equally ready to be duped again. The hundreds, and we might say thousands, who flocked to the celebrated *Williams*, the *oculist*, and to the *Crawcours*, the *dentists*, and to many other similar impostors, though proclaimed to be such by those who were competent to judge, furnish incontestible evidence of the truth of this. But experience is said to be a good teacher, and we are getting so much of it, that we shall doubtless ere long become more wise.—*Balt. Ed.*

Animal Magnetism, Dr. Collyer and his boy Frederick.—We have heard much during the last four or five years about animal magnetism, and although we had heard statements concerning its wonderful effects, from gentlemen of the highest intelligence and veracity, we were nevertheless sceptical upon the subject, and having recently had an opportunity, during the visit of Dr. Collyer, and his boy Frederick, to Baltimore, of investigating the pretensions of mesmerism, our doubts have been resolved into a thorough conviction that it is nothing more nor less than a gross imposition.

Dr. Collyer failed in almost every thing which he attempted, except that of putting his subject into a mesmeric sleep, and that this was feigned, the boy gave the most indubitable indications, on the application of certain tests that were had recourse to by some of the gentlemen on the committee of investigation. For example, the holding of a small bottle of volatil ammonia to his nose, caused him to raise his head suddenly, this was repeated and with the same effect, and on applying capsicum to his mouth, certain jerkings and twitchings of his muscles and contortions of his face, gave manifest indications that, at least, the nerves of his mouth were not insensible to its effects. Seeing this, Dr. Collyer, said he was in a convulsion and soon proceeded to awake him from his magnetic sleep, by certain upward passes of his hand over his face. One evening the magnetized subject, answered several questions, by *mistake*, we suppose, that were propounded to him by two of the gentlemen of the committee, and on another occasion, while Dr. Collyer, was standing behind him, elevating and lowering his left arm, a gentleman present, Dr. Bond, requested Dr. Collyer to ask him how that tasted, the Dr. however, continued to work his arm, without complying with the request, but Frederick soon began to move his lips, and said, "dont like it, taste bad." Out of perhaps some thirty or forty questions that were put to Frederick, his replies except in two or three instances, were such, as we should suppose would convince any one, that animal magnetism was nothing but a vile and palpable imposition. We believe that Dr. Collyer, himself, is so fully convinced of this, that he will never renew his attempt to convince the people of Baltimore, that it is any thing else, though notwithstanding, he had the audacity to assert on the last evening of his exhibition, that the miracles wrought by our Saviour, were nothing more than perfect specimens of animal magnetism. We are gratified to perceive that the newspaper, as well as the medical press, with but very few exceptions, both in this country and in Europe, is lending its aid to put down this ridiculous humbug, and holding up to merited scorn and contempt, those who are using it for money-making purposes.—*Balt. Ed.*

THE AMERICAN

JOURNAL AND LIBRARY

OF

Dental Science.

Vol. II.] MARCH, 1842. [No. 3.

To the Editors of the American Journal and Library of Dental Science.

Sirs:—As a disposition has been manifested by the publishers of the American Journal of Dental Science, that the memoir written by myself, "On Conjoined Suppuration of the Gums and Alveolar Processes," and published in the Medical Recorder, of 1822, should be transferred to the pages of the Journal, you have my entire consent upon the following considerations:—

I should be sorry that the readers of that or any other journal should suppose that I am desirous for its republication on my own account, or with a view to give it a wider circulation, nor indeed, would I readily consent to its republication, but for the following reasons, viz:

It is well known that Mr. L. Koecker, an experienced dental surgeon, now of London, wrote and published in "Chapman's Journal," during his residence in Philadelphia, about the year 1819, a memoir on the "Devastation (or Conjoined Suppuration) of the Gums and Alveolar Processes," in which a case was described that indirectly implicated my professional character, or, at least, it was so understood by very competent judges, even before I saw or knew any thing of it.

Feeling a desire that the public, and more especially my professional brethren, should be in possession of correct views of the character, nature, and extent of the disease above mentioned, I wrote the memoir alluded to. Here I could have *wished* that the matter should have remained. But inasmuch as Mr. Koecker, reiterated the same case, and in the same language, in a work which he published in London, entitled "Principles of Dental Surgery," &c. without the *slightest alteration*, or even an *allusion* to the piece I had written on the same subject—leaving me in the estimation of all those who had read only one side of the question, precisely where his first communication left me. In order, however, that the subject may be placed in its proper light, and that the public, or the profession at least, may enjoy the advantages, (if such there be), to be derived from either, I hereby assent to the re-insertion of my essay in the Journal of Dental Science, on the condition that the communication of Mr. Koecker *shall precede*, or be published in the same volume of the Journal in which my own shall be inserted.

Yours truly, H. H. HAYDEN, *Dental Surgeon*.

No. 1 North Charles-st.

ARTICLE I.

Of Conjoined Suppuration of the Gums and Alveoli. By H. H. HAYDEN, M. D., of Baltimore.

AMONG the various diseases incident to the mouth and teeth, there are but few, perhaps, that are more serious in their nature, or afflicting in their consequences, than that of a conjoined suppuration of the gums and alveoli.

This complaint, though but little known and less understood among us, has been long prevalent among the civilized inhabitants of this country as well as with those of almost every other. It appears very certain that it was even known among the ancients, but was generally confounded with what (as Mr. Hunter says) was "vulgarly called scurvy," and, as it was found to be a disease peculiar to the mouth and teeth, was called stomacace. Even Bachstrom employs the same term in his remarks and observations on the scurvy as it relates to the mouth, and the results of this disease are such as to justify the conclusion that, if not in reality, it was very nearly allied to the scurvy, though in its characters there is an essential difference.

In this light the subject was viewed, it is believed, until about the commencement of the seventeenth century, when Pierre Fauchard, an eminent dentist of Paris, wrote and published a work on the diseases of the mouth and teeth, and in which this complaint, for the first time, was treated as a distinct disease, and of which he thus observes:—"There is, moreover, another species of scurvy of which I believe no author has, as yet, taken care to speak of; and which without interesting the other parts of the body, attacks the gums, the alveoli, and teeth. Not only the gums which are soft, livid, elongated and inflated, are subject to it; but those in which none of those affections prevail are exempt from this disease."

In 1754, it is again described by Lecluse, dentist to the king of Poland, in his "Elemens d'Odontologie," p. 210.

In 1757, this disease was very accurately treated of by Bourdet, in a work entitled "l'Art du Dentiste," tom. i. p. 276, and is called "Suppuration of the Gums."

In 1771, it is again described by Auzébi, dentist at Lyons, "Traité d'Odontotechnie," p. 147. And also by Courtois and Ricci, the latter a dentist at Rheims, see "Principes d'Odontotechnie," p. 44.

In 1773, we likewise find it spoken of in an anonymous work published at Geneva, "Nouveau Traité d'Odontologie," p. 51–2.

In 1778, this truly afflicting complaint is perfectly described and treated of by Jourdain, "Maladies de la Bouche," vol. i. p. 376 to 440. In this instance the disease is termed the conjoined suppuration of the gums and alveoli.

In the same year Mr. J. Hunter published his work on "The Natural History of the Teeth," in which he describes, according to his views, the diseases of the alveolar processes, and among which the effects of this disease are mentioned; but without seeming to have any correct views of the real nature and character of the disease, although it had been so often described by others.

In 1806, Mr. Fox published his work, on the Natural History of the Teeth, and their diseases, in two quarto volumes; and in which he has attempted to describe the disease under consideration, as one of the complaints to which the alveolar processes are liable. But, although he has described the symptoms and the general appearance of the surrounding parts during the prevalence of the disease pretty accurately, it would seem that he had but a very imperfect knowledge indeed of its real character, or of the causes by which it is produced, although, as before, so much has been said of it by preceding writers.

He says "the most common disease to which they (the alveolar processes) are subject, is a gradual absorption of their substance, whereby the teeth lose their support, become weak, and at length are so loosened as to drop out. This disease usually begins to show itself between forty and fifty years of age; and from its frequent occurrence without *any evident cause*, it would seem to be a consequence of having passed the middle period of life." Fox on the Teeth, part ii. p. 87.

The disease, it must be acknowledged, is much too common, but as much so as it is, the presumption is that not more than one person in a hundred is subject to it under fifty years of age; whereas, if it was "a consequence of having passed the middle period of life," we have reason to believe that it would be much more prevalent. From the time at which Fauchard wrote upon this disease, and treated of it as being peculiar to the teeth and alveolar processes, and distinct from other diseases of the mouth, most writers have considered it as a scurvy; and it is still viewed as such by many, even at this day. Nay, so little is known and understood of its character at the present time, that there are many, and among them those who have the assurance to claim the *highest* pretensions as professional men, who have the audacity to promise that they will reinstate the teeth firm in their sockets be they ever so loose, and eradicate the disease from the gums however long they may have been diseased, and all this too under an impression that the complaint is nothing more than a simple scorbutic affection. But there is no circumstance that I have ever been able to discover, that would justify the conclusion that it has any connection with or relation to the scurvy.

Fauchard called it a species of scurvy, but one which no author had, at that time, taken care to speak of. Jourdain likewise considered it a species of scurvy, or an affection analagous to it; and at page 401, vol. ii. a genus of scurvy, as yet unknown. The circumstance that inclined him to view it as such was that the humour or matter that was discharged during the prevalence of the disease, changed the syrup of violets red.

Courtois, who was well acquainted with the disease, and has described its effects, has evidently confounded it with the scurvy.—Dentiste Observateur, p. 94.

Ricci, who has given a very concise account of the scurvy, does not mention the word in his description of the disease under consideration. Hence we are left to conclude that he considered it as distinct from that of any other.

Bourdet, whose researches and observations had been carried to an extent but seldom equalled, and which discover an intimate knowledge of the physiology and pathology of the human mouth, says, "that the suppuration of the gums does not proceed from any scorbutic taint." Hence we are left to conclude that it is an affection peculiar in its nature, and which considering the character and results of its operations, could not have a more appropriate or suitable title than that of a conjoined suppuration of the gums and alveoli.

In the next place I shall proceed to notice briefly, the several opinions that have been offered on the appearances of this disease, of the cause or causes of the symptoms, and of the effects.

Although Fauchard had observed this disease to possess characters specifically different from those of the scurvy, and although Bunon had instituted, in the Hospital de la Salpetrière and St. Come, an investigation, in order to ascertain the nature and variety of diseases of the mouth and their effects on the teeth, as well as for other purposes relating to the profession; and moreover, although Bourdet, and Tenon, had likewise been engaged in a similar investigation in one of the hospitals of Paris, with the same view and for the same purposes, the disease has been almost uniformly considered as allied to the scurvy. Hence almost every writer that has taken notice of it, has identified it with that disease, although the causes, symptoms, and results in a certain degree, but more particularly the name given it by Bourdet and Jourdain, stamp it with a character entirely different.

Of the symptoms that characterize a conjoined suppuration of the gums and alveoli, Fauchard observes, "we recognize it by a soft, livid, spongy state of the gums, and by a white and slightly glutinous pus, which is discharged from under the gums, on pressing the finger lightly from below upwards on those of the inferior jaw, and from above downwards on the superior jaw. The pus is often discharged from between the gums and the alveoli, and sometimes from between the alveolus and the root of the tooth. This occurs more frequently upon the anterior surface of the jaw and teeth, than upon the interior surface, (or part next the tongue) and more commonly about the incisors and canini of the inferior jaw than those of the superior, which are, nevertheless, more frequently subject to this complaint than the molares."

To the symptoms described by Fauchard, others are mentioned as a soft, livid and swollen state of the gums, mostly brown or lead coloured.—Bourdet. A discharge, from between the teeth and gums, of a whitish, putrid mucilage or pus, of an offensive smell.—Jourdain. Other less prominent symptoms are mentioned by several, but which it is not necessary to notice in the present instance.

Of the causes which have hitherto been considered as operating either directly or indirectly in producing this disease, most of the authors who have written on this subject, at least on the continent of Europe, and who, it is believed, are pretty generally, advocates for the humoral pathology, have assigned, among others, the following, viz: A depraved or vitiated state of the circulating fluids, in the part affected, thereby rupturing the capillary vessels and causing numerous little ulcers, which were actually found to exist by Bourdet and Tenon, on the surface of the gums next to the teeth, whence comes a purulent discharge from under the gums, so common in this disease. Hence too, it was considered by Bourdet, an erysipelatous affection. Among the remote causes are, "great exercise of mind, melancholy, bad diet, suppression of the hemorrhoides, the sudden closing up or healing, of setons, issues, &c. The sudden checks or 'repercussion' of some prevailing cutaneous disease; the putrid miasma of low and humid places, of hospitals, and also the gasseous emanations from mines." See Ricci, p. 44.

With women, the remote causes are said to be "repeated and premature suppression of the milk, or, in other words, women who do not nurse or nourish their infants from their own breasts.

Such persons as are very subject to menstrual obstructions, and also such as have experienced a total suspension of the periodical écoulement. Full and plethoric habits of body, unrestrained habits or exercises in eating and drinking, &c. &c.

Mr. Fox, and the author of an anonymous work printed at Geneva, seem disposed to attribute the cause of this disease exclusively to an accumulation of tartar upon the roots of the teeth under the gums. Of this I shall offer some remarks in the sequel.

Having given a brief exposé of this disease, and of the various opinions entertained of its character, I shall proceed to an explanation of my own views of the subject. In doing this, although I am free to acknowledge the obligations I am under to the several authors above named, (with the exception however of Messrs. Hunter and Fox,) for the light which they have shed upon this as well as on various other subjects, yet I shall not be influenced by their remarks and observations any farther than they correspond with the various appearances and indications which I have been a witness to, in numerous instances in which this complaint was committing its ravages on the human jaw and surrounding parts.

The disease in question, though various in its character, is specific in its nature—peculiar in its operations and results—and, in all cases, *primarily seated* in the investing membranes or periosteum that surrounds the roots of the teeth, and lines the respective cavities of the alveoli.

It has been, as before mentioned, generally considered as one disease, embracing almost all the affections of the gums. Hence it is that the scurvy, so called, has been confounded with it. Even those who have taken a different view of the subject, as Jourdain, Bourdet, Ricci and others, and who have denominated it, the conjoined suppuration of the alveoli and gums, have not been careful to explain *all* the different characters which it assumes, and have therefore treated it as one disease, and under one particular head. But the fact is, that although the same in its origin, and nearly the same in its results, it assumes three distinct grades, or forms, and in a manner similar to that of suppuration, caries, and partial necrosis, from an inflammation in the investing membrane of a tooth, or, in other words, a chronic tooth-ache.

The first of these grades is that which is frequently seen to attack one or more of the incisors of the inferior jaw, less frequently the four canini and the incisori of the superior jaw. But no tooth in the human mouth is exempt neither the bicuspidi nor molares. The first signs of this affection are manifested by a bright circumscribed redness about the *edge* of the gums, mostly upon the anterior surface of the tooth, and generally confined to one, but sometimes embracing two, and in a more advanced stage several teeth.

In this stage of the disease but little or no attention is paid to it. It continues to advance, until the gum is found to be detached from the tooth, for some distance in the direction of the root; but still, as the gum does not waste away as fast as the periosteum and external plate of the alveolus is destroyed, it excites little or no alarm, and is mostly neglected. Thus it is left to itself, and in proportion as it advances, the greater is the disposition in the gum to bleed on the slightest touch; at the same time, but little or no appearance of pus is seen to be discharged; on the contrary, a thin aqueous or slightly serous humor. Finally, if left to itself, the whole anterior plate of the alveolus, with the corresponding portion of the periosteum of the tooth, is destroyed, and the termination of the root or fang completely exposed to view, or surrounded by a portion of the inflamed lip or cheek which it is constantly excoriating.

This complaint will sometimes manifest itself on one or more teeth, and on the inner side next the roof of the mouth, but most frequently upon the molares. It gradually extends itself along by the side of the arch of the mouth, and continues its operations until the internal roots of the molares are completely exposed to view.

In this state they often remain through life, pretty firm in their sockets, though depending on the adhesions of the remaining portion of the periosteum and socket of the tooth.

If, however, it is entirely neglected, and the disease aggravated by a variety of circumstances arising from a total neglect of the mouth, the tooth or teeth will at last lose all their support, and fall out as sound as when first formed.

This is an affection to which children, as well as persons of a more advanced age, are liable; and it is believed that Mr. Fox had an allusion to it, when he speaks of persons being subject to the disease (suppuration of the gums) much earlier in life than the usual period at which it commences.

It is, moreover, a complaint which some persons do not hesitate to attempt to cure, with positive assurances at the same time that they will reinstate the gums in their former natural and healthy condition and adhering firmly to the teeth. But such an assurance and such promises betray one of two things, both alike deserving of censure. The first is, it exposes the most palpable ignorance of the physiology of the parts, and the diseases to which they are liable; or 2dly, it betrays a want of principle, or a disposition to defraud, by holding out encouragement of success in a case where every human effort must be unavailing; for it is impossible to reinstate the parts in their original condition.

In this grade of the disease as well as the third, yet to be mentioned, there is much reason to believe that it is, in some instances, hereditary, as I have often seen it prevailing with one or both of the parents, and on the *same* class of teeth in one or more of the children. It is, however, subject to control, or to be kept in check by seasonable and judicious treatment.

The second grade of the disease, though peculiar to and originating primarily in the periosteum of the teeth, like the first, differs materially in some of its characters, being generally more rapid in its progress, and far more serious in its consequences; and, moreover, being in its nature *beyond the limits of control*, except by the removal of all the teeth which may be involved in the disease.

The first intimation we have of this grade of the disease, is that of a dull gnawing and uneasy sensation about the part affected, without any apparent indication of disease. This is by reason of the inflammation being seated in the periosteum of the socket and surrounding the tooth. It does not, however, remain long in this state, for, if on the anterior surface of the teeth, the external plate being thin, is very soon destroyed, and the disease is communicated to the gums. It continues to advance, sometimes rapidly, until the periosteum of the tooth or teeth is completely denuded upon half or two-thirds of the length of the roots from their points.

The processes of the teeth, or so much of the external, and sometimes internal, plates of the alveoli, as are involved in the disease, are wasted away or likewise destroyed.

The gums assume a very diseased appearance, throwing out upon their surfaces morbid granulations, as in most cases of diseased bones; whence is discharged a thin ichor, which, when absorbed, produces such a degree of excitement in the lymphatics, as that they may be traced up the side of the face in a line almost as hard as a cord. The maxillary and cervical glands are, at the same time, sensibly enlarged.

From the commencement, and during the progress of this disease, the gums remain united to the neck of the tooth or teeth as usual, with a portion of the orifice of the alveolus still embracing the tooth, so that on striking the crown or body of the tooth with an instrument, and at the same time applying the finger on the gums over the tooth, a sensible motion in the root is felt, showing not only that the socket of the tooth is partially destroyed, but that the disease originated in it.

Should the disease be situated upon one or more teeth where the surrounding sockets are somewhat thick and dense, and in consequence of which it is not so readily or rapidly destroyed, the diseased periosteum will throw out, from between the gums and teeth, morbid excrescences of a luxuriant growth, and in number proportioned to the extent of the disease.

If it should attack the bicuspides and molares of the superior jaw, where, in general, the external alveolar plate is thin, morbid granulations are thrown out immediately where the bone is destroyed, and they continue to spread, in proportion to the loss of bone, and at the same time, discharging as has been mentioned, an extremely corrosive ichor.

If we attempt to remove those fungous excrescences, thrown out from between the teeth and the gums, we find the hemorrhage profuse and troublesome; and this is not the most unfavourable circumstance attending it, for their growth appears to be greatly promoted and their malignity increased. This being the case, the disease may be said to be without the limits of control, except by the extraction of the teeth affected, when the roots will be found more or less completely deprived of the investing membrane, and when this is the case, no human effort can restore it again as in other diseased bones, and for very obvious reasons.

This form of the disease I have seen in several instances, and in one as early as at fourteen years of age; and, moreover, it may always be considered as an unequivocal mark of a scrofulous habit or taint in the constitution of the patient.

The third and last grade of the disease, or that which is very appropriately called the conjoined suppuration of the alveoli and gums, though differing in some of its characters, is the same in its origin, and nearly the same in its results. The persons, seemingly, most liable to it, are those who otherwise enjoy the best of health and the soundest teeth.

The first appearance of the disease is, that the gums upon the anterior surface of one or more teeth, or upon the side next to the tongue or roof of the mouth, or even between the teeth, discover a preternatural circumscribed redness. In a more advanced state it becomes purple and even livid; somewhat swollen, and of a shining appearance. On pressing the finger, or instrument, slightly upon the diseased part, a thick purulent matter, or pus, is seen to discharge at the neck of the tooth. As the disease advances, the gums become more swollen, turgid, and of a deeper red or purple colour; while the ill conditioned pus increases in quantity and acquires, at times, a very fetid smell. In some cases it will commence upon one tooth, skip or pass by the adjoining one and attack the third, and so on all around the mouth. But commence where it may, if no attention is paid to arrest or check its progress, by the time that the socket, in which the disease begins, is so far destroyed that its respective tooth has no longer any support, the disease has begun its operations on the socket of the adjoining tooth, and so on until the whole are swept away, and nothing left to assist in mastication, but the naked gums.

It becomes necessary in the next place to say something of the cause of this complaint.

I have observed that it is primarily seated in the periosteum of the teeth, and that of the corresponding alveoli—hence a disease peculiar to these parts, and to which the periosteum of the bones of other parts are by no means exempt. Hence too, whatever tends directly to produce an irritation or inflammation in those membranes, may be considered as a proximate cause by which the disease is produced.

In the present instance, we find it arising from two causes; the one external, the other internal.

That arising from an external cause is produced by an accumulation of tartar; which, from neglect or inattention, is suffered to collect in such quantities as by insinuating itself between the gums and teeth, to press upon the periosteum, and being sharp and uneven in its surface, it thereby produces irritation, inflammation, and a partial suppuration, which if neglected, deprives the tooth of support and they ultimately fall out, though, perhaps, perfectly sound.

In this instance, three circumstances present themselves as worthy of particular notice, as it respects the relation or connection existing between the disease arising from this cause and the one yet to be described.

1st. The disease is, by no means partial in its operation. Whenever the tartar accumulates in a quantity sufficient to press upon and irritate the investing membrane, whether on the molares of the superior jaw opposite the parotid duct, or the teeth opposite, or in front of the sublingual ducts, (taking it for granted that the tartar is deposited from the saliva) the effect is the same: on pressing slightly on the gums, pus is seen to flow out from between the gums and the tartar, or from under the gums and beneath the tartar; and that too, oftentimes, from *all* the teeth on which tartar may have collected in any quantity.

This is seldom or ever the case when the disease arises from an internal cause, for it commences upon one or more *alternately*, and so on through the whole circle of the jaw.

2dly. From the slow progress of the disease in this instance, although prevailing throughout the entire circle of both superior and inferior jaws, little or no fetor is observable in the matter thus discharged, unless the disease is far advanced; nor, in fact, from any other source, except such as may arise from a want of due attention to cleanliness in the mouth, in which case, it differs essentially from that which is emitted from pus discharged from carious or otherwise diseased bones. The case is directly the reverse when the disease is produced from an internal cause.

3dly. The disease, when arising from this cause, is susceptible of perfect control, provided the teeth have not lost their support by the destruction of the greatest portion of their respective alveoli. Nothing more is necessary than a judicious and careful removal of the existing cause, the tartar—a proper attention to cleanliness, with a view to preserve the teeth free from extraneous deposites, and the use of astringent and tonic gargles, elixirs, &c. of which there are many, and such as are very efficacious. How far this disease is susceptible of control, when arising from a different cause, may be seen by the various opinions that have been advanced on the subject, and the methods that have been hitherto pursued by those who have undertaken the treatment of it.

Conjoined suppuration of the gums and alveoli, appears to be occasioned by a morbid excitement in the periosteum of the teeth and alveoli, from some internal cause, and from the period of life at which it generally attacks the patient, it has been considered by most writers on the subject, as an indication of some change in the economy of the system, or constitutional depravity in the circulating fluids by which a change in the vascular action of the part affected is produced, and which terminates in a conjoined suppuration, &c.

Hence, it has been alleged, that those who are most frequently attacked by the disease are such as are of full habit of body, or, in other words, corpulent; and those who, after the meridian of life are subject to a habitual costiveness. It is said to be also occasioned by great exercise of mind, sedentary habits, melancholy, bad diet, suppression of the hemorrhoides, the sudden closing up or healing of issues and seatons, the 'repercussion' of some prevailing cutaneous disease, &c.

With women it is said to be occasioned by the premature and repeated suppression of the milk. It is likewise considered as a consequence of obstructed catamenia, as it is found frequently to prevail with those of the sex who are "mal-reglées," or with those who have experienced a cessation of the écoulement périodique, &c.

What ever agency these circumstances may have in the production or the promotion of the disease, I shall not pretend to decide. This much, however, may be relied on—the disease, as Bourdet has very correctly observed, seldom attacks any person under thirty years of age, though I have seen three or four cases at an earlier period. From that to forty and upwards, it is much more common. Persons of corpulent habits, of either sex, are peculiarly liable to it. Women who have passed the critical period of life, are, in frequent instances, afflicted with it, however good may have been their previous state of health, or that of the mouth and teeth.

And, in general, the disease, in such cases, is more rapid in its progress and more difficult of control than in almost any other, and the quantity of pus discharged is very great, although the patient is rarely sensible of it, for it is mostly mixed with the saliva and carried into the stomach, or voided by expectoration.

I have likewise observed, that persons subject to gout or rheumatism, though corpulent, are seldom afflicted with this disease. On the contrary, I have remarked that persons afflicted with a suppuration of the gums, are seldom troubled with gout or rheumatism, if so, however, the paroxysms are slight and of short duration.

Whether the disease of the gums or mouth may be considered as having any influence in preventing the gout or rheumatism, is not for me to decide in the present instance. The discharge, however, of fetid pus from under the gums during the prevalence of a "conjoined suppuration of the gums and alveoli," and that too of long continuance, may often be seen to exceed that from a seton. Hence, frequently, the extremely fetid smell accompanying this discharge of pus.

I shall next offer some brief remarks on the treatment of this complaint.

The methods hitherto pursued, in Europe, by the most skilful medical practitioners, as well as professional dentists having been so rarely successful in effecting a cure; one is left, and not without reason, to doubt the efficacy of any course of treatment which human ingenuity can invent; nevertheless, in the incipient stage of the disease, if the patient fortunately applies at that period, it is susceptible of a partial control.

At this period, as before mentioned, the gums upon the anterior surface of one or more teeth appear red, or lived and swollen. In pressing the gums slightly, a thick purulent matter is seen to harge at the neck of the tooth.

In this, and a more advanced stage of the disease, Bourdet was in the habit of removing, by excision, the diseased portion of the gum.

This course he was led to pursue, with a view to a cure, from the following circumstance. While engaged with Tenon, in one of the hospitals in Paris, in examining the various diseases of the mouth and their effects upon the teeth, they found on dissecting up the gums in a state of suppuration, that the inside, next the teeth, was covered with little white vesicles or blisters, from which was discharged a viscid humour, which being thrown, when living, upon the periosteum and bone, was supposed to be the agent by which the alveoli are destroyed in this disease. Hence Bourdet considered it an erysipelatous affection; and finding the seat of the disease, apparently, in the flesh or gums, it was denominated a suppuration of the gums.

We are not to conclude, however, from this circumstance that the disease is primarily seated in the gums; for it will be found in many cases, that when the periosteum of a bone is attacked by disease, it presents a vesicular appearance, and from which, in certain stages, is discharged a morbid fluid. The surrounding substance assumes a similar appearance, and frequently terminates in ulceration. This is particularly the case in the mouth. Moreover, this disease often originates in the alveoli as in the second grade, and even upon the soundest tooth, commencing with an inflammation and swelling like the common paroulis, and suppuration follows. But in this instance, the matter is seldom if ever discharged through the gums: it follows the direction of the roots, and is discharged at the edge of the gums, at the neck of the tooth; and will continue so to do, though in a less degree, until the tooth or teeth thus affected are deprived of all support, and fall out, for no effort can control the disease in this case, except by extracting the tooth.

This is one instance which shows that conjoined suppuration of the gums and alveoli is primarily seated in the periosteum of the teeth and alveoli—that it is occasioned by some constitutional defect or cause—and moreover, that tartar can have no agency in the business, as it is impossible for it to gain admittance, or be formed there by the common process.

The method pursued and recommended by Bourdet I have generally adopted; not, however, that I considered that in removing the diseased gums, I likewise removed the inflamed periosteum; but that by this course the turgidity of the inflamed vessels was relieved, and the tendency to a morbid excitement checked by new and healthy granulations, supplying the place of previous disease.

By this course and the use of appropriate gargles, of which there are many, I have generally been successful in checking the progress of the disease, in some cases, even for several years. But whether as the patient advances in age, the disposition to disease in those organs increases or not, I have uniformly found the complaint to return, and, in some instances with symptoms so aggravated, and, at the same time to such an extent, as to defy all control.

This disease, as described and treated, as long ago as 1728, by the most eminent of the profession in Europe, I have been acquainted with, and in the habit of prescribing for, these twenty years past.* I have seen it in all its forms and stages, which, perhaps it ever assumes; and, although I am ready to admit, as before, that in the incipient stage it is susceptible of control, and at all times, may by proper attention and treatment, be in some degree checked, I do not hesitate to assert that a radical cure of the disease is beyond the reach of medical skill, and whoever will take a correct physiological and pathological view of the subject, will not hesitate to admit the fact.

This, however, is not to be understood as applicable to suppuration of the gums, when occasioned by the presence of any extraneous matter, as tartar upon the teeth.

If we were to admit that the complaint may be overcome and subdued, it is even said, and not without reason, that when the disease is somewhat advanced, it is even dangerous to suppress it. "Unfortunately," says Ricci, "the assistance is always required too late, and at a time when it is impossible and even dangerous to suppress this suppuration already established, and by which, nature is seeking to disembarrass her works from a morbid humour which is committing its ravages on those parts which are the most interesting, viz: the teeth.—Ricci's Principes d'Odontotechnie, p. 44.

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* At this time nearly forty years.

In confirmation of this, a case is mentioned by Jourdain, in which a lady, who, otherwise enjoyed the most perfect health, was attacked by this disease, and which threatened to deprive her person of one of its greatest ornaments.

The course pursued for the treatment, was such as in a degree to check the suppuration; and while she was felicitating herself with the prospect of a speedy cure, she was, for the first time in her life, attacked with a dry cough, pains and heat in the breast, and spitting of blood, &c. Her physician, M. Bouvard, suspecting that these unpleasant symptoms were occasioned by the attempt to suppress or overcome the disease of the mouth, was under the necessity of resorting to measures calculated for the *reestablishment* of the suppuration of the gums, and which having accomplished, she was relieved from the alarming symptoms of organic disease.—Maladies de la Bouche, tom. i. p. 401–2.

Another case is mentioned by the same author, of a lady who was attacked with a conjoined suppuration of the alveoli and gums. After submitting to the usual surgical operations resorted to in similar cases, such as excision of the gums, the use of the cautery, &c. she resorted to the baths, to detergent drinks, to blisters, and even to a seton between the shoulders, without deriving any real success. Numbers of her teeth fell out of her mouth, and the others announced a disposition to follow, sooner or later.—*Ib.* p. 400.

This disease, from the nature and extent of its ravages, and these too as great or more so amongst the opulent and rich, as among the poorer classes of society, has, at different times, engaged the attention of some of the most skilful physicians, as well as professional dentists in Europe; and in the course of treatment which they have pursued, they have, severally, resorted to every means for its cure that medical skill could suggest; such as emollient, astringent and detergent gargles of various kinds; astringent, tonic, and antiseptic elixirs; mercurial washes, absorbent powders, aromatic pastes, electuaries, alteratives, sedatives, venesections, vesicatories, injections, setons, issues, excision of the diseased parts, scraping the diseased bones, repeated applications of the actual and potential cautery, &c. Notwithstanding which, their efforts have proved ineffectual.

In some cases, and, most probably, in the incipient stage of the disease; and in others, where much depended on the constitutional temperament of the patients, they have succeeded in subduing the complaint for a time only.

In their attempts at a course of internal treatment with the same view, but very little, if any better success has attended their efforts. Hence it has been observed by Fauchard, "that which is singular, and which I have often observed, is that those who have been treated for this disease with internal medicines, such as antiscorbutics, or those of a different kind, have in no instance been cured."

It is true that there have not been wanting persons in different parts of Europe, who have widely proclaimed the virtues of pretended specifics which they have discovered, for the cure of this complaint. But their object seems to have been the profits arising from the extensive sale of their nonpareils, elixirs, &c. more than that of any intrinsic virtues which they possessed, in curing this afflicting malady. Of this, at least, they have been accused, and their charlatanic nostrums publicly ridiculed:

Such is the nature and character of the disease in question. How far the opinions which they have advanced, relative to its cure are correct, or to what extent they are to be admitted or supported, will appear by the following:

Fauchard, in his remarks on the complaint, observes, "we may conclude from what has already been said, that this disease is not to be radically cured, but when the teeth which are affected are out of the mouth," tom. i. p. 276.

Bourdet likewise remarks, (tome i. p. 187,) "if on the contrary we suffer the suppuration of the gums to become established, which indicates amongst other disorders, the destruction of the alveoli; *all the remedies which I have* mentioned afford but a very weak relief, and serve only to prolong the loss of the teeth."

In recurring to the remarks of Ricci, (Principes d'Odontotechnie, p. 44.) which I have already quoted, he further observes, "the patients, under these unfortunate circumstances, should, therefore, resolve or be reconciled to see their mouths deprived of the finest ornament. There remains for them, no other means of remedying the defect or of obviating the deformity but the usage of artificial teeth, which, under such circumstances, become indispensable to facilitate the pronunciation and mastication."

In the works of Jourdain, whose writings on this department of medical science, stand unrivalled, we find the following. "I have known many persons who have been really attacked by the disease under consideration, and which has been treated, even by the means which, it is said some have used with success, and I can protest that I have not, as yet, seen *one only that has been cured.*"—Maladies de la Bouche, tome ii. p. 399.

Hence, whatever encouragement may be held out, or promises given for the cure of this disease when it really prevails, it will be found at last that every means and every effort will prove ineffectual.

ARTICLE II.

A Treatise on Mechanical Dentistry. By SOLYMAN BROWN, M. D., D. D. S.

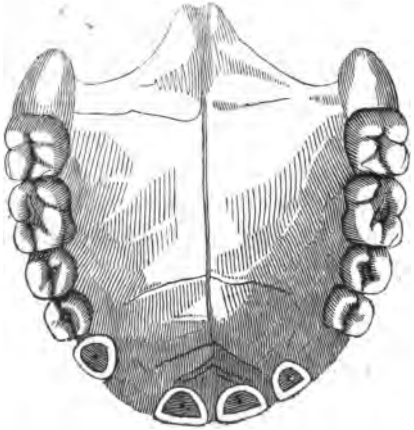
(Continued from page 177.)

CHAPTER II.

Of the insertion of several teeth on natural roots, in cases where the number of natural roots does not equal the number of teeth to be inserted.

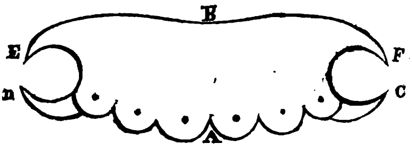
37. It sometimes happens that several good roots remain in the mouth, fit to sustain artificial crowns, but that some one or more roots have been removed either from between or near the others, so that a complete arrangement cannot be effected on the principles laid down in the first chapter.

38. Let it be supposed that the crowns of the four upper incisors and the two cuspidati, are lost, and also the roots of the right cuspidatus and left lateral incisor; as in the following cut.



In this case although the four remaining roots would sustain four separate crowns independent of each other, yet there would still be two vacancies which are to be supplied; and though in the case supposed in the cut, there are back teeth which might be used to sustain a plate, with clasps, yet the patient might not consent to the use of them; and cases moreover often occur in which there are no back teeth in the mouth, leaving it imperative on the dentist to sustain the six front teeth on four roots, as in the cut.

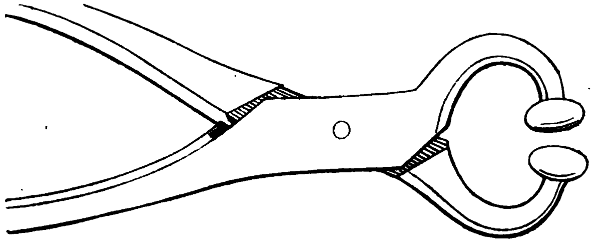
39. Take a wax impression of the front part of the mouth, embracing at least the entire space to be supplied with teeth, as described in sections 16 and 17, from which proceed to obtain metallic casts as explained in sections 18 and 19. To that part of the tin cast representing the space to be occupied with artificial teeth, fit a plate of tin or lead rolled to the thickness of drawing paper, so that it shall cover the ends of the roots together with the space left by the two teeth that have been extracted, extending back into the mouth three-fourths of an inch, and passing behind the first bicuspides on each side of the mouth. Bring the two casts together upon the soft metallic plate, and then trim it to the following shape.



a is the front part covering the roots; *b* the back part extending to the roof of the mouth or palate; *c* and *d* are points of the plate which serve to retain it in its place while struck between the casts, but are afterwards cut away in case they are too much in sight; *e* and *f* are points extending behind the first bicuspides, which serve to sustain the piece steadily in its place; and especially prevent the whole apparatus from being pushed foward by the action of food, the tongue, or the antagonizing teeth.

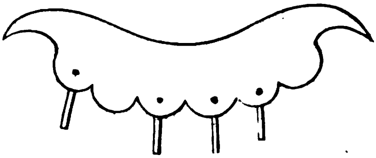
40. Reduce the soft metallic plate to a plane surface under a planishing hammer, and employ it as a pattern by which to cut the gold plate which must be struck between the casts as explained in sec. 20. In swedging large plates which are to be much

bent between the casts, care must be taken to anneal the gold plate once or twice during the operation, which is done by simply heating it to redness either under the blowpipe, or in a coal fire, care being taken that the gold be not melted by excessive heat. The following instrument will be found very useful in bending gold plates into a shape approaching that given by the casts, in order to allow the casts to be brought together properly.



41. Pierce the gold plate with small pivot holes by means of the plate punch shown in section 22, exactly over the nervous orifices in the roots, into which solder pivots of gold or platina of the size of a small knitting needle, and one-fourth of an inch in length; after which clean the plate, file it smooth, and cut off the corners *c* and *d* of the plate, if the case requires it.

The plate and pivots will now assume the following appearance.



Adjust this plate to a plaster cast which has been reserved for this purpose, in order that the artificial teeth may be ground and adjusted to the plate just as it is desired they should stand in the mouth. To this end support the teeth in their just position by means of softened beeswax placed behind them on the plate to which it may be made to adhere by warming the plate.

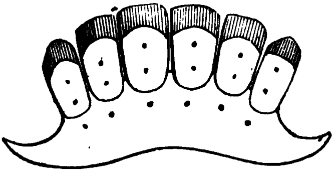
If the patient can be seen at this stage of the process, instead of fitting the teeth as just described, according to the best judgment of the operator, cover the plate with softened wax, which place in the mouth, and bring the ends of the teeth of the lower jaw against the wax till the mouth is shut in its natural position. The impression of the antagonizing teeth in the wax, will be a sure indication of the just position of the artificial substitutes. The wax may be cut away with a penknife as each tooth is adjusted in its place.

If, on the other hand, the operator finds it necessary to fit his teeth to their place before seeing his patient, the whole may be tried into the mouth by proper care; or if sealing-wax be used instead of beeswax, the trial will be attended with no difficulty.

42. When the mineral teeth have been set in the position required, and ground at the butts so as to fit the plate accurately, and project beyond it in order to touch and even press upon the gum, cover the enamelled faces of the teeth with a mixture of plaster and sand in equal parts reduced to a paste with water. This mixture is little liable to crack under the heat of the blowpipe, especially if secured by a few turns of fine iron wire, such as dentists frequently need in various parts of their work. This wire is little thicker than a bristle or coarse hair, and is so soft and pliable as to be little liable to break.

Remove the beeswax from behind the teeth, which may be effected with a penknife, or by the aid of warm water.

43. Each tooth may now be removed from its place, and a gold back or stud may be fitted to it as described in section 22. Care should be taken that the gold back be fitted closely not only to the tooth but to the plate, and if, by accident, the junction with the plate should be imperfect, the vacancy may be filled with gold foil carefully introduced so as not to change the position of the tooth. Over this foil the solder will follow, and even incorporate itself with the foil, uniting the whole into one solid mass, especially if a sufficient quantity of solder be employed. When each tooth has its gold back thus properly adjusted, the whole piece will have the following appearance as seen from behind.

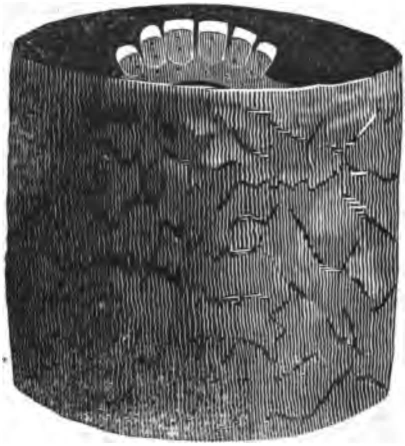


44. When the plaster has been thoroughly dried, which may be done in an oven, provided the operator be in haste, or over a fire

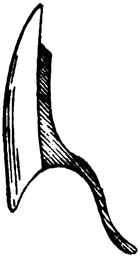
in a ladle, provided the degree of heat used be not sufficient to *recalcine* the plaster, the piece is ready to be soldered.

In order to perform the operation of soldering with neatness, solidity and beauty, apply the borax to the back of the tooth only, quite down to the plate, by means of a flat, thin piece of cane or soft wood. A sufficient quantity of the borax will run down upon the plate without applying any to that, and if the operator has any fear that the borax will carry the solder over too great a portion of the plate, he may apply a thin coating of whiting to all that part to which he wishes no solder to run, leaving in all cases a semicircular spot behind each tooth, which must be kept quite clean in order that the solder may run over it unobstructed. Next, apply a quantity of solder to the back of each tooth, nearly or quite equal to the weight of the back itself. This may be in one or several pieces, at the pleasure of the operator. Let the borax dry, if time will permit, lest it should displace the solder during the sudden conversion of the water into steam by too great a degree of heat.

45. Before applying the blowpipe to a piece like this, the hollow cup of charcoal mentioned in the first chapter should be prepared as follows:—



Let the operator not forget to apply the heat with caution, lest the teeth be cracked by sudden and unequal expansion, and let the heat be continued until the solder assumes the form best calculated to give strength and beauty to the work. This form which the solder should assume, may be thus represented on a single tooth when seen laterally with a section of the plate.

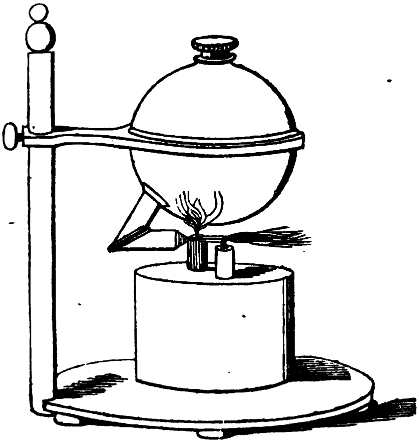


Should the quantity of solder on any tooth be found insufficient, more may be added during the process of soldering, and the heat again raised to the point of fusion.

In soldering pieces like this, some advantage would be gained, if the right hand of the operator could be at liberty to make use of a rod of platina of the size and length of a knitting needle, with which he may move the melted solder about on the gold plate at pleasure, in order to bring it into the desired form.

To accomplish this object, it will be necessary to use one of Hook's self-acting blowpipes, which, with an improvement made by Dr. Jahial Parmly, of Bond street, New York, will be found of great importance to the mechanical dentist.

This blowpipe, as is well known, consists of a brass globe composed of two hemispheres screwed firmly together, having an orifice at the top for the purpose of introducing alcohol, and a tube leading from the upper hemisphere to the flame of a lamp placed underneath the brass sphere. The whole may be supported on a stand as follows:—



Without entering more minutely into the details of the formation of this instrument, I will merely add, that when the globe is partly filled with alcohol, and the lamp lighted beneath it, a part of the alcohol is soon converted into vapour, which finding no vent excepting through the small tube leading to the upper hemisphere of the brass globe, the vapour or steam of the alcohol is forced from the orifice of the tube directly against the flame of the lamp by which the alcolic steam itself takes fire and forms a jet of flame of great intensity. Dr. Parmly's improvement consists in having two distinct wicks in the lamp with their appropriate tubes, so that one may act on the globe while the other is wholly diverted from it, or both may be directed upon the piece to be soldered when that may be *necessary.* With this instrument Dr. Parmly has succeeded in preserving the solder in a state of fusion for any required time, while with his platina rod he has given to the solder the form and position required, and all this without raising the temperature enough to fuse the gold plate.

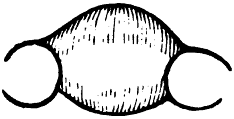
When the piece in question has been properly soldered, cleaned and polished as already described, the pivots may be wound with a little raw cotton, or floss silk, before fixing the plate firmly in the mouth, in order to avoid the wearing away of the roots by the metal ; or when the cavities in the roots are very large, they may be filled with soft wood, and the pivots inserted into these wooden plugs.

Of the insertion of a single tooth in the absence of a natural root.

46. This is so nice and difficult an operation that I shall deem it expedient to present several examples, inasmuch as we find that many dentists who can construct a good double set—rarely ever succeed in setting a *single tooth* well.

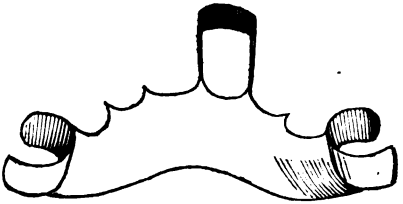
Let us first suppose that the tooth to be supplied, is a central incisor of the upper jaw ; and that it is intended rather for show than mastication, inasmuch as the patient is unwilling to submit to an arrangement that would render the artificial substitute fit for general use.

After fitting a gold plate to the space to be occupied by the tooth, as already directed, solder a wire of fine gold or platina to each end of the plate, of sufficient length to embrace the two adjacent teeth as far as those next to them will permit, as follows ;



Such a plate with its clasps of wire, when well fitted to the gum and the two adjacent teeth, is found to sustain a tooth in its place with sufficient firmness for all purposes excepting that of masticating food; but if a tooth be desired for the performance of this latter function, another plan must be pursued.

Select two of the molares or bicuspides, one on each side of the mouth, around which clasps of gold may be adjusted, either with or without filing a passage for the clasps, as circumstances may require. To these clasps attach the extremities of a plate constructed as already described, and sustaining the tooth as follows:



As the best methods of attaching a clasp to a plate in a neat manner, are of some importance to the student, I may state that winding with fine iron wire will sometimes succeed, yet the following mode is always most efficient and exact. The clasp which in most cases should be as wide as the tooth it embraces will admit, may be secured to the gold plate while both are on the model, by joining them with beeswax, or, when necessary with sealing-wax. Then lift the whole carefully from the model, lay it on a piece of paper with the side on which the wax is downward, and pour plaster upon the upper side until both the clasps and plate are imbedded in the plaster. When the plaster is set, remove the wax, dry the plaster, apply the borax, and solder as usual.

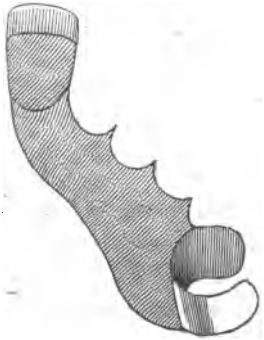
In this as in all other cases when two pieces of gold plate are to be united with solder, if the two do not accurately meet, fill up the vacancy with gold foil before applying the borax and solder, as already directed.

This method of insertion, although more expensive than with one clasp only, has the advantage of greater firmness and durability.

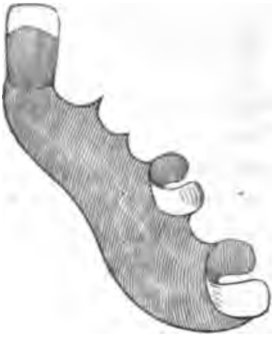
The disadvantages of such a plate and clasps, are, the injury accruing by necessity to the teeth which are embraced by the clasps, and the inconvenience experienced by the tongue from the presence of a plate in the front of the mouth, which the tongue meets in articulating all the lingual sounds. Both these disadvantages, however, are generally preferred to the absence of a tooth from the front of the mouth.

In cases like the foregoing, for the purpose of preparing a metallic cast in such a manner that the gold plate struck upon it shall fit accurately to the natural teeth behind which it passes, cut away from the plaster model all the teeth nearly level with the gum, then after taking the metallic casts from this, strike the gold plate over the whole, and cut away the plate accurately with round files, where the natural teeth are to meet the plate.

47. It happens not unfrequently that, either on account of the loss of the teeth on one side of the mouth, or for some other solid reason, an attachment can be made to only one tooth, or to those on but one side of the jaw. In the former case a piece may be constructed as follows.

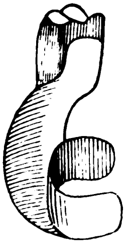


If the plate and spring, or clasp, are of considerable thickness and strength, this arrangement will be successful, even for purposes of mastication, but it is desirable in many cases, if practicable, to take two points of support, as follows:



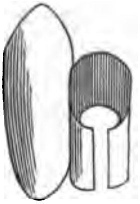
In all cases the clasps embracing natural teeth for the purpose of supporting artificial ones, should be as wide as possible, in order to avoid wearing away the teeth at the neck.

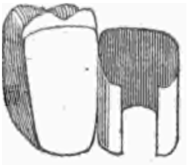
48. Let us next suppose that the second bicuspis has been removed, and the dentist is required to supply its place. The object in this and all other cases, being to throw the fastenings as far back into the mouth as possible, in order to be out of sight, let the clasp embrace one side of the first molaris, and both sides of the second, thus:



This method of fixing will prove very firm, provided the strength of the materials be justly proportioned to the use to which the artificial substitute is to be applied.

In those cases where the next tooth is the only one to which attachment can be made, it must be evident that no great dependance can be placed on the firmness of the work. If however the tooth which is to sustain the piece, be either very flat like some bicuspides, or very strong and angular like some molars, the work will not fail to be of use. Take for example a first bicuspis and a first molaris.



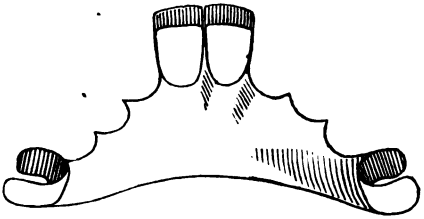


In the former case, if the second bicuspis be very flat the clasp will be little liable to a rotary motion. In the case of a first molaris, when the second is strong and angular, the most perfect success will attend the operation. In both these cases the strength of the material together with the peculiar form of the supporting tooth, will secure the piece from being displaced by any other means than hard food which must not be allowed to come in violent contact with so slight a fixture.

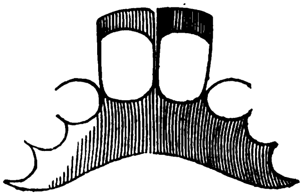
Of the insertion of several teeth on a gold plate with clasps sustained by natural teeth.

49. As cases of this description are very various, and not less in number than the arithmetical changes that can be rung on 32 bells, I shall deem it necessary to give only a few examples as specimens of the whole: and I begin with the most common and most important case of this kind, which presents itself in supplying the two central superior incisors.

Although there can be little doubt of the superior permanence and utility of a plate of this kind attached to some of the back teeth, thus:—

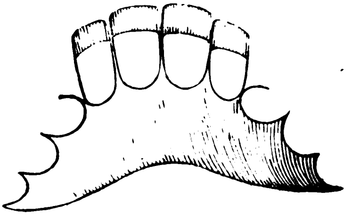


Yet many American dentists and most of the English practitioners would treat the case as follows:—

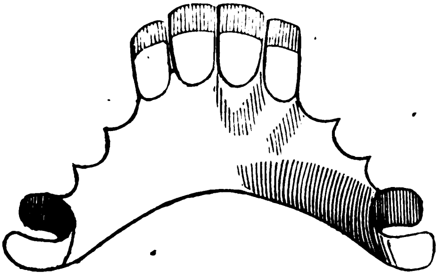


Here the whole apparatus is secured in position by means of two small gold wires encompassing in part the lateral incisors. Some assistance however is rendered by the narrow neckings on that part of the plate which is adjacent to the neighboring teeth. These neckings must fit with great exactness or they cannot be endured by the tongue. Pieces like this are less liable, perhaps, than some others to affect injuriously the natural teeth: which is certainly a great argument in their favour.

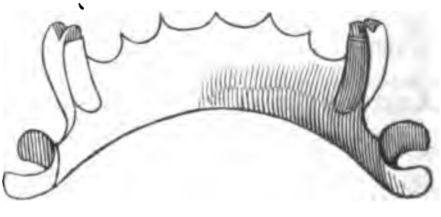
50. Sometimes when even four of the incisors are to be supplied, the same principle is successfully observed, thus:—



But in almost all cases of this kind, I should prefer an attachment to some of the back teeth when practicable, as follows:



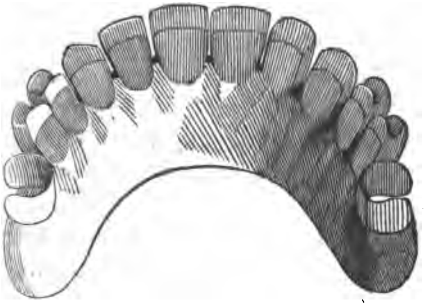
If two bicuspides are to be supplied as is not unfrequently the case, let the following be a sample:



51. In cases where several teeth must be supplied, and only a few remain to sustain them, various mechanical contrivances become necessary to solve the problem with success.

Suppose, for example, that the two first molars, are the only remaining natural teeth. It will be evident that the weight of a plate bearing the ten anterior teeth, would soon cause the two supporting teeth to swerve from their rectitude and allow the front teeth to fall away from the gum.

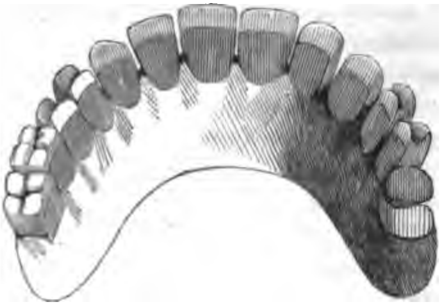
In order to avoid this catastrophe, the plate must be extended as far as possible behind the supporting molars, in order to find a fulcrum or sustaining point to the lever here represented by the gold plate.



These extremities of the plate may be used to sustain artificial teeth, or they may be left unoccupied, but their presence is essential to the proper construction of the piece, inasmuch as the two supporting molars must be drawn perpendicularly from their sockets before the front can fall in consequence of their motion; whereas a mere lateral declination of these supporters would produce that effect in the absence of these extremities of the plate behind the two natural molars.

52. One of the most vexatious cases falling into the hands of the dentist, is that in which a large plate must be supported by a single tooth.

If this should chance to be a large and firm molaris, the chances of success are somewhat enhanced; in which case the piece will present the following appearance.



Cases of this character are so doubtful as to the permanence of the supporting tooth, that unless it be very firm and sound it ought not to be trusted. When however, the attempt is made to construct such a piece, let the clasp be very strong and the plate thin and light. The teeth also should be as slender as possible.

53. The operator should always avoid laying plates over roots of the natural teeth remaining in the mouth. Besides the absolute certainty that these roots will prevent the perfect fit of the plate to the gum, they are liable to be agitated by the constant action of the plate upon them by which they become loose, and often require extraction, after which the plate no longer fitting the gum, becomes useless.

Although many patients are very averse to the removal of these roots, and often allege examples among their acquaintances in which plates have been laid over these roots of the natural teeth, with perfect success, cases rarely occur in which these persons cannot be persuaded to pursue a proper course of treatment, by judicious management on the part of the dentist. Sometimes he may succeed in inducing them to submit to the operation of extraction, by showing them that their money will be wastefully expended in procuring work which rests upon a foundation insufficient and precarious; at other times, by assuring them that he is wholly averse to executing work unless he can do it in what he knows to be a proper manner, by which he can do justice both to his patient and his own professional reputation. Often he may succeed in his object by persuading the patient to permit him to remove one or two only of the loosest of the roots, after which, the charm being broken, no resistance will be made to the extraction of the rest.

At any rate, if the operator consents, in any instance, to lay a plate over the stumps of teeth, he owes it to himself to impress it on the memory of his patient that he does it in opposition to his judgment and experience, and does not consent to hold himself responsible for the result. If this statement should be entered on his books, with the patient's knowledge, it might prevent future complaints, for it happens not unfrequently that a dentist in extensive practice is blamed for operations, the failure of which is the result of the obstinacy of his employer.

54. Another precaution of which the young practitioner should be early apprized, is, never to lay a plate after teeth or roots have been extracted, until sufficient time has elapsed to allow the alveolar processes to be absorbed, and the gums fully healed, so that the teeth shall not become too short by subsequent absorption of the subjacent parts.

The dentist who neglects this precaution, will find himself frequently called on to substitute longer teeth, and will even sometimes be assured that they have been always too short from the beginning.

55. To avoid these unpleasant occurrences, let him on the one hand, insist on allowing the gums sufficient time to become thoroughly healed and settled before constructing his work, and, on the other hand, let him never forget to leave the artificial teeth as *long* as circumstances will permit. In many instances, especially when the artificial substitutes are met on their cutting edges by antagonizing teeth, the latter of these injunctions cannot be obeyed, and it is in such cases particularly, that the dentist should protect himself from both blame and loss, by keeping a record of the statements which he made to the patient on the subject.

56. It is very difficult to give any definite rule as to the period required for the absorption of the alveolar processes and the through healing of the gums after the removal of teeth or roots. In some cases a week may be sufficient, if only a single root and that a short one, has been removed. A month even would be too brief a period for the majority of cases that occur in practice, and two or three months are sometimes required. Each case is modified so much by the condition of the patient's health; by the number and character of the teeth extracted; and by the state of

the natural teeth remaining in the mouth, that the period required in any given set of circumstances, is better learned by observation, than taught in theory; and this is one, among many reasons, requiring a patient apprenticeship of several years under suitable tuition, in order to enter understandingly upon general practice in dental surgery.

57. The dental operator owes it to his patient who has confided in his skill and integrity, and he owes it to justice and humanity, to inform all his professional friends who wear artificial teeth on metallic plates, of the great importance of not merely putting the mouth in a healthy condition before the introduction of artificial substitutes, but of the absolute necessity of keeping the mouth and all it contains, perfectly clean afterwards.

Nothing is better established among physiological facts, than that filth lodged among the teeth, and left to ferment, decompose, and putrify in the mouth, invariably destroys, sooner or later, all the remaining natural teeth; and thus renders useless all the clasps and fastenings of which we have treated at large in this chapter.

It may indeed be true that many patients will not comply with the instructions of the dentist on this subject, as it is unquestionable, that even some females of extreme neatness in other things, allow the mouth to be by far the most filthy place in all their habitations. They scrub their hearth-stones and require the chimneys of their houses to be now and then swept, but as to their mouths, they have really no time to keep them clean. But notwithstanding all this, the dentist who introduces artificial teeth, should urge the necessity of keeping the mouth absolutely clean.

58. It is known to every dental practitioner that although there is no single and simple acid that will corrode or dissolve gold, yet there are combinations of acid and other acrid substances allowed by some persons who wear metallic plates to remain so long and so constant in their mouths, as to destroy a thick plate of gold in a very few years.

This never could occur if the mouth were washed thoroughly with water and a brush several times a day; much less, if some slightly alkaline solution, or a good dentifrice were occasionally employed.

59. In order to aid the patient as much as possible in this duty of keeping the mouth free from impurities, the dentist should in all cases, if not impracticable, so construct his work that it may be readily removed from the mouth.

The springs or clasps which have been already described, should be made sufficiently fast to sustain the plate and teeth, but at the same time capable of being slipped from the natural teeth which they embrace, at the pleasure of the wearer.

To this end it may be sometimes necessary to restore the elasticity of the metal which has been destroyed by the heat employed in soldering. This is effected by the strokes of a small hammer; and by using a small anvil called a beck-horn, it may be done with ease, especially in those parts of the clasp where the elastic spring is most required.

60. This elasticity of the clasp is most required in those cases where the neck of the tooth which sustains the plate, is considerably smaller than the crown over which the clasp must be first passed. I have sometimes been compelled to obviate this difficulty by means of an elastic gold ferule made of very thin plate and wound in concentric circles in the manner of the mainspring of a watch. This should be so constructed that when encompassing the neck of the tooth it shall embrace it firmly. Over this the clasp attached to the plate may be readily passed, if all parts be properly constructed.

[TO BE CONTINUED.]

ARTICLE III.

The use of Arsenious Acid for destroying the Nerve in Decayed Teeth. By W. E. Ide, M. D., of Zanesville, Ohio.

A safe and efficient agent for destroying the nerves of decayed and painful teeth, has ever been a desideratum. Among the various things that have at different times been suggested for this purpose, none has been more unqualifiedly lauded by some, and condemned by others, than arsenic. In the "Guide to Sound Teeth," published by Dr. Spooner, of New York, in 1836, public attention is first called to its use; and its qualities are extolled in no measured terms. In a work soon after published by Dr.

Burdell, its use is condemned as cruel, ineffectual and dangerous. In vol. 1, page 227, of the Journal of Dental Science, Dr. S. Brown says—"of all the remedies which have hitherto been generally made known to the profession in this country, arsenic is unquestionably the most prompt, safe, and effectual, when properly applied." The opinions of such men as these, surely no one acquainted with his profession will treat with disrespect: but as "the doctors disagree," it may be difficult for the inexperienced to decide. As the matter now stands, we fear that some may wholly discard a valuable remedy, while others may use it so indiscriminately, as frequently to fail of the beneficial results that might otherwise be obtained. In the hands of the above mentioned gentlemen who have recommended it, it has undoubtedly been so judiciously used, as to be unattended by the objections that have elicited this communication: but others, as we have done, may use it in a manner to make a caution not altogether unnecessary.

We have used it pretty freely for more than three years, and though we find it a remedy of much value, and one for which we have been unable to find a substitute; yet its use has sometimes been attended by effects that should be known to the inexperienced. One objection that has been urged against it is, that the use of a poison so virulent as arsenic, can not be unattended by danger. If properly used, I conceive this objection can never be valid, as the quantity necessary to produce the most desirable result can never be productive of any serious consequences. The power of the remedy should only be a caution to the inexperienced against the use of a quantity, that may be as unnecessary as dangerous. A second objection has been founded on the pain which is said to have resulted from its application to an exposed nerve.

In our first experiments we used simply three parts of arsenic and one of acetate or sulphate of morphine, and contrary to our expectations in nearly all cases where the nerve was much exposed, the application was attended by a considerable amount of pain. When the nervous pulp of a molar tooth was denuded and inflamed, the pain was often excruciating. More recently we have used equal parts of arsenic and morphine. A small quantity of this, say the fifteenth or twentieth of a grain, is sprinkled on a piece of cotton that has previously been saturated with kreosote, and carefully applied to the exposed nerve, after as much of the foreign matter as practical has been cautiously removed from its surface. Over this, white wax is to be applied in a manner to prevent pressure, and the whole permitted to remain five or six hours. If the preparation is applied to more than one tooth at the same time, the patient should be cautious against swallowing his saliva, lest nausea to a greater or less extent be the consequence. Since having used the kreosote, we have found the amount of pain to be very materially diminished, but never entirely wanting if the nervous pulp is much exposed. Where the bony parieties of a tooth is sensitive to such a degree as to make its preparation for a plug painful, this sensibility can always be perfectly removed, and with no pain, by this application. But this practice is not unfrequently followed by results which constitute the chief objection that we desire to point out in this communication. As is recommended by many at the present time, it was our former practice to apply it in all cases where the nervous sensibility of a carious tooth was such as to make its preparation for a plug painful. In teeth that are highly organized, especially in young persons, every dentist knows that a carious surface may be exquisitely sensitive though the nervous pulp may not be exposed. This is especially the case with the incisor and cuspidati. In such cases as we have before said, the application of arsenic will entirely remove the morbid sensibility for the time, and the tooth can be plugged with the greatest facility. But it often occurs that in a few days the whole tooth becomes so exquisitely sensitive, as to be affected by the slightest change of temperature. If the enamel is thin and transparent, the tooth assumes a purple or reddish brown color, and the investing membrane of the fang becomes more or less inflamed as is indicated by pain in occlusion of the jaws. Where the absorption of the poison is slight this appearance subsides in a few days, and the tooth is restored to its original color. In other cases where the morbid effect was more marked, the inflammatory symptoms have continued from one to two months; when the tooth would become perfectly destitute of vitality. The purple color would then be changed to a dark brown, that permanently destroys the beauty of the tooth. In one or two instances I have removed plugs that have been in such a tooth for two years or more, and not the slightest trace of vitality has been discovered. The nerve and blood-vessels through the whole dental canal have been completely destroyed, though they could have been in contact with the preparation only through the medium of absorption. If the enamel of a front tooth is partially transparent, and the patient young, indicating activity of the absorbents, he should bear the pain of having it prepared for a plug without the use of arsenic, rather than endanger its beauty. If the tooth be opaque there is little danger of absorption taking place; but in this case the bony parieties are rarely so sensitive as to render any application necessary. If in the above cases we do not entirely discard the use of arsenic, it would probably be better to continue its application to a particular tooth not more than one hour, and then proceed immediately to cleanse and plug. By this practice, absorption may be to some extent at least prevented, and the desirable results partially, if not wholly, obtained.

If the nervous pulp of an incisor or cuspidatus is exposed, especially in a young person, it is better to destroy it by thrusting a small instrument up the dental canal: as by this means the portion of vitality which is derived from the external periosteum, will, for a time, at least, be retained. If the exposure is slight, the lead or gold cap may be had recourse to. In the bicuspides or molar teeth the arsenious compound may be freely used, provided they have not so far decayed as to render plugging impracticable. In these cases great care should be taken to remove the remains of the disorganized nerve and blood-vessels, and all foreign matter from the dental canal, before the plug is introduced, lest by decomposition of these substances, a gas may be generated, and inflammation of the parts surrounding the tooth, result. If the cavity is of a shape and size to render plugging impracticable, or the lining membrane of the dental canal secretes pus, as sometimes happens, it is better at once to have recourse to extraction. *

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* The value of arsenic as an agent for destroying an exposed dental nerve, or the sensibility in a decaying tooth, preparatory to the operation of plugging, has now become well established, but its indiscriminate use, is by no means advisable; the circumstances under which its employment is proper are very correctly set forth in the foregoing communication. The effect which it has, when applied to the teeth of very young persons, as described by Dr. Ide, we have frequently noticed, and for the last two years, have refrained from applying it to the teeth of very young subjects, unless urged to it, by the most pressing necessity. The effect here alluded to, was described by Dr. H. H. Hayden, at the first meeting of the American Society of Dental Surgeons, held in August, 1840, in the city of New York.—*Balt. Ed.*

ARTICLE IV.

Removal of the Superior Maxillary Bone.

This formidable operation was performed at the Massachusetts General Hospital, by Dr. J. C. Warren, on Saturday, Dec. 4th. The patient, John Farland, had been afflicted some months with the cephalomatous species of carcinoma, commonly known as fungus hæmatodes. The malignant tumor commenced in the left antrum, protruded into the left nostril, breaking down the ossa palati, filling the nasal fossæ, and pressing upwards the inferior orbitar plate. The patient being aware of the nature of the operation, and the chance that it offered for his restoration, submitted to the extirpation of the whole of the disease, with the entire superior maxillary bone, which was effected in the following manner.

The patient being seated in a chair, his head supported, and compression made upon the carotid arteries, an incision was made from the outer angle of the eye to the angle of the mouth, and the flap dissected towards the alæ of the nose, and continued higher up over the cartilages and between the orbit and the eye. The outer flap was dissected in the opposite direction, until the masseter muscle was uncovered, and cut away from the malar bone, about one half of its extent. The orbit was then perforated, and the malar bone cut through. The nasal process of the superior maxillary, near its junction with the sphenoid and ethmoid bones, was next separated; a tooth was removed, breaking down the anterior wall of the alveolus, and the back part was cut through with the forceps. A strong-pointed knife was introduced into the patient's mouth and the soft palate skilfully separated from the palate bones, and the os maxillare detached from the pterygoid process of the sphenoid bone. After the division of the supra maxillary nerve and artery, which was accomplished by cutting from behind forwards, the remaining attachments being slight, the entire mass was removed with but little difficulty or delay. The internal maxillary artery was secured, with a branch of the facial; and the patient, considering the length of the operation, which occupied nearly an hour, suffered less from loss of blood than was anticipated, and is now doing well.

Notwithstanding the frightful cavity made by the removal of this disease, the deformity will be but trifling, should no untoward event occur during the process of uniting the divided parts.

[*Bos. Med. Sur. Journal.*

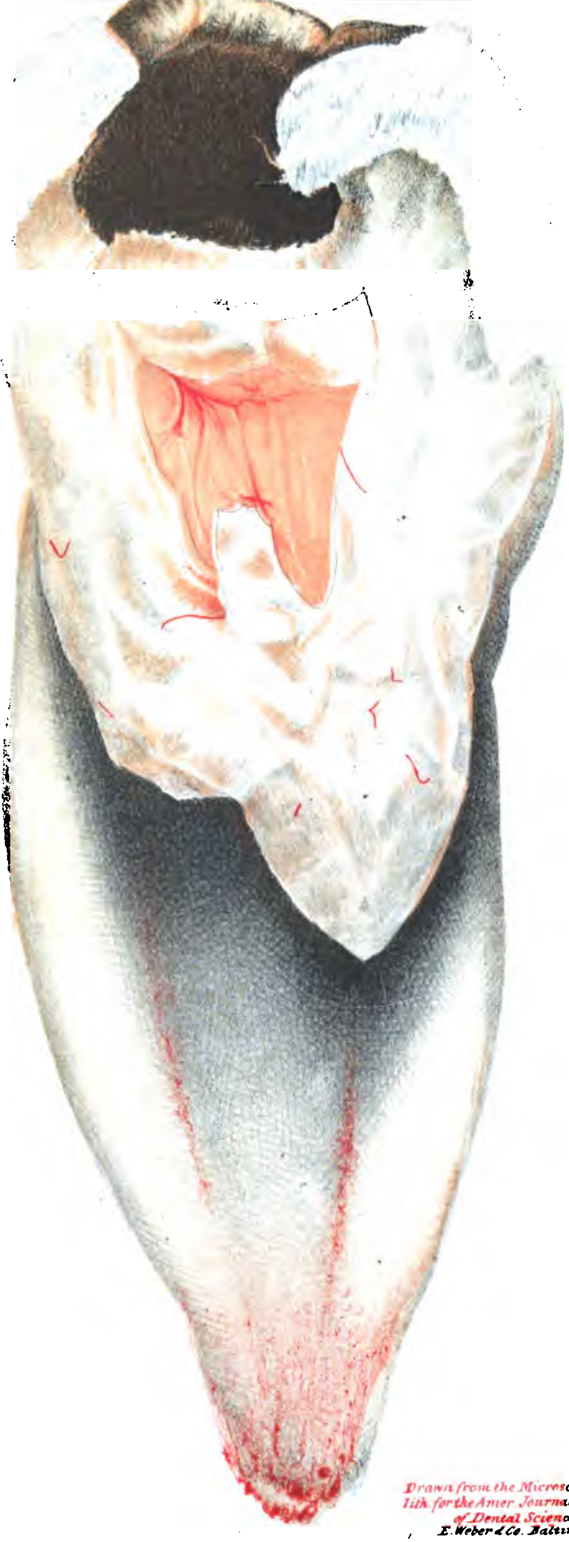
ARTICLE V.

On the Vascularity of Dental Bone. By CHAPIN A. HARRIS, M. D., D. D. S.

ALTHOUGH the doctrine of the nonvascularity of the teeth, as advanced by the celebrated English anatomist and physiologist, John Hunter, has been shown, over and over again, by facts which one would suppose none could doubt, to be erroneous, the existence of vessels in dental bone, has not hitherto, that the writer of this, is aware of, been actually demonstrated. By the aid of a microscope, he, however, has been fortunate enough to discover vessels charged with red blood in the substance of human tooth-bone, in two instances. The first time he done it, was a little more than twelve months ago, and it was in a thin section which he had cut from a molar tooth of a very young person. In this a vessel was seen charged with red blood, and it was exhibited to several medical gentlemen, and to the class of the Baltimore College of Dental Surgery. This section of tooth is at this time in possession of the writer, and may be seen by any one, who may have the curiosity to examine it, by calling on him at his residence.

The second time he had the good fortune to make this discovery, it was in the half of an inferior molaris, taken from the mouth of a boy, eleven years of age, and of which, an exact representation of a microscopic view of it, is here annexed. The tooth had ached violently for several days previously to its extraction, and from which circumstance, he was induced to believe, that the vessels of the pulp were highly injected, and to satisfy himself upon the subject, he, soon after its removal, split it open with a strong pair of excising forceps. As was anticipated the vessels of the pulp were filled with red blood, and on examining the half of the tooth in which this had remained, through a microscope, a number of vessels within the very substance of the bone, charged with this fluid, were also distinctly seen.

It will be perceived by an examination of the annexed drawing that a considerable portion of the crown had decayed, and that it was not split exactly in the centre between the roots, but that the fracture had passed partly through one of the fangs.



Drawn from the Microscope by E. Weber.
lith. for the Amer. Journal and Library
of Dental Science by
E. Weber & Co. Baltimore.

The fractured surface, the decayed cavity in the crown of the tooth, the pulp and vessels within the bone charged with red blood are all so distinctly seen, that no other explanation is deemed necessary.

ARTICLE VI.

Observations on Muco-purulent Secretion of the Antrum Maxillare.

By S. P. HULLIHEN, Wheeling, Va.

THIS somewhat rare but painful disease, is doubtless, the result of a morbid secretion of the membrane lining the antrum maxillare. It is evidently constitutional in its nature, and probably of a scrofulous character.

Like most diseases of a constitutional diathesis, it appears to be always more or less mild or malignant, just in proportion as the constitutional taint, or predisposition is strong in the patient; and this must serve to explain the great difference in the severity of the disease in different patients.

Among the first indications of the disease is a slight inflammation in the pituitary membrane, and differing only from a common cold in being almost exclusively confined to one nostril. As the inflammation progresses, the nostril in consequence of a thickening of its membrane, closes; the tonsil of that side becomes enlarged; the eye always filled with tears, and a yellow watery discharge is almost continually flowing from the nose on the affected side. The length of time the disease is assuming this stage differs very widely in different cases.

The second stage is marked by a slightly fetid muco-purulent discharge from the nostril, which in severe cases is of a very thick consistence. The yellow watery discharge still continues, but generally not so frequent as the purulent form. The thickening of the pituitary membrane gradually subsides, the nostril opens, and in this situation the disease remains for a shorter or longer period, until the antrum which is scarcely ever suspected of being involved in the disease becomes filled with an altered secretion from its lining membrane.

If then the disease is mild in its form, a pain of a neuralgic character will most probably be felt over the eye for sometime.

Then a slight uneasiness in the antrum, and often a sensation of fullness on that side of the face. The discharge from the nostril will be sometimes watery, sometimes glairy, always very fetid, excoriating the nostril and blocking it up with troublesome incrustations. The disease is not unfrequently mistaken for ozœna, and may occasionally remain in the situation just described for several years before the walls of the antrum give way, and the true nature of the disease is revealed.

But where the disease is more malignant in its nature, in addition to the symptoms that accompany the milder form, a sensation of great weight or pressure will be felt in the antrum; after which a dull deep-seated pain supervenes; which is followed by an acute pain darting into the ear, through the temple and scalp, and over the eye in the direction of the frontal sinus. The eye waters incessantly; a thin sanious discharge is constantly passing from the nose. The cheek begins to project, the teeth to protrude from their sockets, the walls of the antrum at last give way, and a dark coloured secretion very thick and fetid of a slimy consistence, begins to escape through the opening. This generally takes place during the first year of the disease.

Now, in the first stage of this disease, it is evident from the thickening of the pituitary membrane, that the duct between the antrum and nose becomes closed, and judging from the state of this membrane in the second stage, it is likewise evident, that the duct re-opens before the antrum becomes filled with an altered secretion. The bursting then of this cavity from an accumulation of secretion within it, does not appear to proceed from the closure of this natural opening, but must be attributed to the character of the secretion itself. In the milder forms of the disease, the secretion being thin, it doubtless is discharged freely through the duct. But in the more malignant the secretion is of such a consistency as to prevent the possibility of its free escape through such an opening, its accumulation is therefore inevitable, and the bursting of the antrum is the consequence. The state of the teeth appears to have no agency whatever in producing this disease. Where it is most mild, the teeth are sometimes much decayed, and where it is most malignant, they are frequently sound. The apparent soundness of the teeth alone, however, is far from always indicating the true character of a disease in the antrum. A tooth may be apparently free from disease, and yet from the absorption of the gum and alveolus, the fangs may be so much exposed, and the nerve so much irritated from extreme degrees of heat and cold as to induce inflammation in its internal membrane, and finally suppuration, and an abscess may be the result.

Treatment of Muco-purulent Secretion of the Antrum.

The character of the disease now under consideration, requires both local and constitutional treatment.

On the milder form of the disease a perforation into the antrum, after the manner laid down in the first stage of abscess of this cavity, may be performed. But where the walls have already given way, and where the disease is malignant, the opening should be made with a reference to the state of the bony parieties of the antrum, which are generally more or less carious.

Where the bones are but slightly involved, the opening should be made to embrace if possible all the diseased portion; but where the caries is too extensive for this, the opening may be made of such dimensions as will enable the operator to examine fully the extent of the disease, and to remove with certainty all loose and diseased portions of bone.

After this the patient may be directed to syringe the antrum twice a day with a solution of the chloride of lime, which may be occasionally changed for a solution of the muriated tincture of iron, of lunar caustic or sulphate of zinc. The washes should be very weak at first, and gradually increased in strength until their effects are sensibly felt in the antrum for some time after each washing.

The patient will now be likewise ready for the constitutional treatment, and may be delivered over to a physician to be treated after the manner of other constitutional diseases of a similar nature. If this be neglected, the local treatment may it is true, often have the effect of gradually diminishing the discharge, and sometimes of checking it entirely for a time, until some derangement in the general health of the patient occurs, and then a renewed discharge from the antrum will most probably ensue. The condition of the general system must be first changed before a cure of this disease can with certainty be effected.

In the next number of the Journal, I propose to treat of another collection of fluids which occasionally occur in the antrum maxillare, differing in most particulars from both muco-purulent secretion and abscess of this cavity.

Miscellaneous Notices.

Bibliography.—We have several dental works which it was our intention to have noticed in the present number of the Journal, but are prevented from doing so for want of room; we shall endeavour however, to attend to them in our next.

American Society of Dental Surgeons.—When the formation of this society was first talked of, the very idea of such an association was hooted at and scouted by many as impracticable. Various objections were raised, and unexpected obstacles thrown in the way. One was unwilling to impart from the stores of knowledge which he gave himself the credit of possessing, to gentlemen of the profession of merely creditable pretensions. "A community of knowledge? oh no," says another, "I can never consent to that!" A third says, "I am no society man," and a fourth objected on the ground that it would be likely to bring him into contact with those whom he supposed occupied a less lofty place in the temple of professional fame, than that to which he had attained. As for being benefitted himself by an interchange of views, the idea was not to be thought of; it was preposterous; he had already drank too deeply from the fountains of knowledge to learn more, and was unwilling to bestow any part of his choice and invaluable treasures upon others. But, the society was formed, and under circumstances as auspicious as any of its warmest advocates had dared to anticipate. It has now been in existence for nearly two years, and we are of those who believe that much good has already resulted from it, and that it is destined to achieve for the profession and community at large, and that too, before many years shall have passed, a greater amount of benefit, than individual effort ever has, or ever could have accomplished. The members of the society may perhaps, therefore, regard it as a fortunate circumstance that they have none of these false prophets among them. Men of such selfish and narrow-minded views ought not to be admitted to membership in the society, and that they have not been, may be considered as a fortunate circumstance. We are happy to believe that among the more scientific and intelligent part of the members of the profession, there are few such, and it is only from this class, that the society should be made up.

It must be a source of gratification to the members of the society to know, that the efforts which they are making to advance the science of dental surgery, and elevate the dignity of the profession, and purge from it the empiricism with which it has so long been infested, meets the hearty and warm approval of the most distinguished of their professional brethren both at home and abroad. We have received letters from many of the most eminent European practitioners, expressive of their high gratification, and proffering for the advancement of the interests of the society, whatever aid it may be in their power to bestow. Thus encouraged, and sustained by the best wishes of the medical profession generally, they have every inducement to go on. The cause in which they are engaged is a good one, and we say to them relax not your efforts in it, but persevere, and you will reap the rich reward of knowing that you have not only added to the respectability and usefulness of your calling, but to the good of your fellow beings.

But, as we have on another occasion said, let us repeat, admit none to fellowship with you, except men of creditable scientific pretensions. You had better offend half a dozen unworthy applicants for membership by rejecting them, than to admit one who is not qualified to practise the profession, and by so doing, bring reproach upon your body. But, while on the one hand, caution is necessary, it should not on the other, be carried so far as to exclude such as are really worthy of a place among you.

The time appointed for the next meeting of the society is rapidly approaching. It is now near at hand, and we hope the members of the society will bear this in mind, and make their arrangements in time to attend. We are anxious that there should be a full meeting, and although the place in which it is to be held, is a little more distant from the residences of southern and western members, than was that of either of the preceding ones, we hope that that circumstance will not prevent any from being present. At the last meeting which was held in Philadelphia, Dr. L. S. Parmly, of Mantanzas; Dr. Ludolph Parmly, of Mobile; Dr. E. Taylor, of Natchez; and G. W. Parmly, of New Orleans; were in attendance. We hope to have the pleasure of greeting them again at our next meeting in Boston, and many of our other southern and western brethren. Every member should be willing to make some sacrifices to aid in the accomplishments of the important objects of the association. Although it was at a sacrifice of considerable time and money, that many who were present at the two preceding meetings, held in the cities of New York and Philadelphia, attended, we do not think that any regretted having done so. Both of these meetings were highly interesting and the attention which the distant members received from those resident in these places, were peculiarly pleasant and gratifying. We do not know how the members of our own immediate profession regard us in Boston—the far famed and celebrated nursery of science; but we doubt not that we shall receive a cordial welcome. The professors of the Mason street Medical College, as we learn by letter from our highly esteemed friend, Dr. Smith, editor of the "Boston Medical and Surgical Journal," have, in a high-minded and praiseworthy spirit of liberality, tendered to the society the use of their principal lecture room. This act of unlooked for courtesy, merits from the members of the society their warmest thanks.

The next meeting is looked forward to with much interest, and we expect from what we have been able to learn, that members from almost every section of the country, will be present.

Dr. Eleazar Parmly, first Vice-president of the society, will deliver the opening address, and from the well known abilities of that gentleman, a rich intellectual treat may be anticipated; dissertations will also be delivered by E. Baker, M. D. of New York; E. Townsend, of Philadelphia; V. Cuylor, M. D. of Hartford, Connecticut; H. M. Hayden, M. D. of Baltimore; and E. Maynard, M. D. of Washington City. Besides these, it is expected that many interesting papers will be read on the occasion.—*Balt. Ed.*

Porcelain Teeth.—The manufacture of these teeth have, within the last few years, been brought to very great perfection. Although invented and manufactured for a long time in France previously to their introduction into America, those which are now obtained from that country do not bear any thing like so close a resemblance, either in shape or colour, to the natural organs, as those that are manufactured in this. We believe that the porcelain teeth which are manufactured in the United States, and especially in Philadelphia and New York, are superior, in almost every respect, to those that are manufactured in any other part of the world. This is saying a great deal, but we believe we speak understandingly upon the subject. We must however, do Mr. Ash, of London, the justice to say, and at the same time we beg leave to return him our thanks for the very beautiful specimens of teeth which he did us the courtesy to send us a few months since, that the teeth which he manufactures so far as their shape and resemblance in all other respects to the natural teeth are concerned, are unsurpassed by any which we have ever seen. But they have one fault, and that is, they do not stand the degree of heat necessary to attach them to gold plate with solder sufficiently pure to resist the action of the fluids of the mouth. With American practitioners this is an insuperable objection.

But notwithstanding the perfection to which the porcelain teeth have been brought, important improvements in them, are almost every day being made. A few months since we saw a very important improvement in the manner of securing the platina rivets to plate teeth, by Dr. Harrington of Philadelphia. It consisted in forming heads upon them previously to introducing them into the porcelain paste, and by which their liability to come out, is, we should suppose, effectually prevented.

While on a visit to New York, about a year and a half ago, we were shown some very beautiful teeth, by our friend Dr. L. Parmly, manufactured by Mr. Alcock, of that city. If they had any faults, we were unable to detect them.

The manufacture of these teeth, however, has been and is at present, carried on more extensively, we believe, by Mr. S. W. Stockton, of Philadelphia, than any other gentleman in this country. The teeth manufactured by him are known and used in almost every part of the world where dental surgery is practised, and to him the profession are very greatly indebted. To supply them with an article that should be lasting, and resemble as nearly as possible the human teeth, he has laboured assiduously and perseveringly for many years, and his efforts have certainly been crowned with a success flattering to himself and gratifying to the profession. Recently, he has made a very valuable and highly important improvement, consisting in the formation of an artificial gum to single teeth, so nearly resembling the natural, that, when placed in the mouth, none but a close and critical observer can perceive the difference. To the dental surgeon, and many requiring artificial teeth, this is a desideratum, for it often happens that the loss of the teeth is either accompanied, or followed by the destruction of the alveolar ridge, and to remedy which, the practice hitherto, when porcelain teeth were used, has been to form them in a block so as to fit as accurately as possible to the parts that it was to rest upon. This plan, however, for various reasons has been found objectionable. In the first place, block teeth, as they are usually called, are too clumsy to be worn with comfort. In the second, they are more liable to get broken, than single teeth mounted upon gold plate, and in the third and last place, they cannot be fitted as accurately to the inequalities of the parts upon which they are to rest as single teeth fitted to a properly adapted metalic plate.

We are aware that single teeth with gums have been manufactured for a long time in Paris, and we have a number of them at this time in our possession, but the imitation, both of the teeth and gums, is so poor that we have seldom used them. In these respects, the specimens which we have seen from Mr. Stockton's manufactory, are faultless, but that they are susceptible of improvement in some others, is very probable, and we hope he will not cease his efforts until he shall have perfected them in all

There are other gentlemen in Philadelphia and New York, who have the reputation of manufacturing very excellent porcelain teeth. We hope they may meet with encouragement commensurate with their merits.

We intend to notice hereafter, such improvements in this department of the art, as shall from time to time be made, and that we may be the better enabled to do this, we would be glad, if manufacturers on making any which they may conceive to be valuable, would communicate them to us. It will be to their interest to do so.—*Balt. Ed.*

Wonderful Discovery.—It will be seen from the following statement, which we extract from one of our daily newspapers, that *Dr. Jones*, of Baltimore, has made a discovery that is likely to throw his amalgum of mercury and silver, better known by the name of "*mineral cement,*" for filling teeth, into the shade.

"Dr. Jones, of St. Paul street, has shown us another tooth, the cavity of which is filling by ossification, or the growth of new bone; it is an upper grinding tooth having three roots, into two of which the decay had penetrated so as to make a large continuous cavity within the body; the cavity in one was large enough to admit a lump of cotton as large as a small pea, the other not quite so large; the new bone has filled both the roots, and a small portion of the body of the tooth."

The description of the tooth here given, it will be perceived, is that of one whose inner walls are totally devoid of life, so that the doctor must have indeed, possessed wonderful skill, to have resuscitated and endowed them with attributes that a living tooth does not possess. But, as he is becoming somewhat celebrated for making discoveries, or perhaps we ought to say, for having awarded to him, the authorship of discoveries made by others, we might be considered as wanting in proper credulity, were we to doubt his ability to impart to dead dental bone, recuperative powers. But seriously, we wonder if he understands the doctrine of the formation of dental bone? We very much question it, for if he does, he would at once perceive the utter impossibility of the filling up of a carious cavity in a tooth, and more especially that of one whose inner walls had been deprived of vitality, which is always the case with a tooth after the destruction of its lining membrane. That the editor of a newspaper should be deceived in a matter with which it is presumed he is wholly unacquainted, is not to be wondered, and in this case, we doubt not that the statement was founded more upon Dr. Jones' representation, than from a close physiological investigation of the supposed phenomenon.

Too wise to learn from books.—An itinerant dentist of a neighboring state was asked a short time since, if he was a subscriber to the "American Journal of Dental Science." He said "no, I doesen't read books, I depends on occular demonstration." We very much question whether he could read, if he had the inclination. But, notwithstanding the ignorance of this individual, we are told that he has sense enough to impose upon many intelligent people, and we need not wonder at the degraded state of the profession when such men are patronized. If people will suffer themselves to be thus easily duped, they are not much to be pitied.

Anchylosis of the Lower Maxilla with the Temporal Bones.—Dr. Payan, surgeon to the Hotel Dieu, at Aix, in a collection of facts on different diseases of the head, which he has just published, reports this remarkable case. It seems that the patient, 77 years of age, was attacked by the cholera morbus in 1835, and carried to the hospital, where he died in two days. It was observed upon his admission that he could not move the lower jaw, and that the tongue was protruded through an aperture formed by the loss of the four upper incisor teeth. His children and relations stated, that during his lifetime he had frequently told them that he had been unable to move his jaw from between four and five years of age, which he attributed to an accident he met with at that time, viz: the fall of a table upon his head, probably causing fracture of the maxilla near to the condyles. Upon dissection, complete ossification was found to have taken place with both temporal bones, and the union was so perfect, that no line of demarcation could be seen between them. All the teeth existed, with the exception of one or two molar, and the four upper incisors which had been extracted to admit the introduction of food. They were in close apposition with each other. The inferior incisors were pushed more forwards, and the molars more outwards, than in the natural state. In each parotid duct was found a calculus. No trace of fracture could be discovered in any part of the bone. There was no anchylosis of any other joint. This curious specimen has been frequently exhibited by M. Dubreuil to the medical students at Montpelier.

Cases of anchylosis of this articulation have been recorded before, but they have generally been found only when other joints had undergone the same process. An officer died at Metz in 1803, who had long been affected with general rheumatism, brought on by fatigue during the war, in a cold and moist country. Upon dissection, every articulation was found anchylosed, and his skeleton, which is now in the museum of the Ecole de Medicine, forms in reality a single bone.—*Lond. and Edin. Monthly Jour. of Med. Sci.*, from *Gaz. Med. de Paris,* 28 Aug. 1841.—*From the Am. Journal Med. Sci.*

Baltimore College of Dental Surgery.—The second annual public Commencement of the Baltimore College of Dental Surgery, was held in the Assembly Rooms, on the evening of Friday, February 18th, 1842.

The proceedings were commenced with prayer by the Rev. Job Guest. The Dean presented for graduation the following named gentlemen, upon whom severally the degree of Doctor of Dental Surgery was conferred by the President of the Faculty, Professor Hayden.

W. R. SCOTT, Raleigh, N. C.; Subject of Thesis, *Dental Caries.*
WM. W. H. THACKSTON, Farmville, Va. " *Diseases of the Antrum.*
JOS. B. SAVIER, Norfolk, Va. " *Irregularities of the Teeth.*

The Dean then announced the following named gentlemen upon whom severally, the honorary degree of Doctor of Dental Surgery was conferred.

ELEAZAR PARMLY, M. D. *New York;* SIR SAMUEL CARTWRIGHT, *London;* LEVI S. PARMLY, M. D. *Matanzas;* J. STARR BREWSTER, M. D. *Paris, France;* LEONARD KOECKER, M. D. *London;* EDWARD MAYNARD, M. D. *Washington, D. C;* —— GREENWOOD, *Boston;* J. F. FLAGG, M. D. *Boston;* DANIEL HARRINGTON, *Philadelphia;* EDWARD HUDSON, *Philadelphia;* ISAAC I. GREENWOOD, M. D. *New York;* JAMES S. GUNNELL, M. D. *Washington, D. C.* J. SMITH DODGE, *New York;* LUDOLPH PARMLY, *Mobile;* A. B. HAYDEN, *Savannah, Geo;* SOLYMAN BROWN, M. D. *New York;* JAHIAL PARMLY, *New York;* C. HAYDEN, *Washington, D. C.*

The Valedictory Address was then read by Professor W. R. Handy, and the services were closed by a benediction, pronounced by Rev. John N. M'Jilton.

THOS. E. BOND, JR. *Dean.*

At the first annual commencement the degree of Doctor of Dental Surgery was conferred on R. COVINGTON MACKALL and ROBERT ARTHUR, both of Baltimore.

T. E. B. JR.

Clerical Encouragement of Quackery.—We can scarcely open a newspaper, without meeting with the advertisements of one or more quack medicines, recommended and avouched by clergymen. Now such is the confidence of the mass of the people in their spiritual pastors, that these certificates have in them a power, even greater than the forged testimonials of eminent deceased physicians, so often seen appended to the same advertisements. Such being the case, we would respectfully ask our clerical friends, to whom we attribute no bad motive in this matter, whether they have ever reflected on the mischief they do to the community, by these recommendations? Do they not know, that if a nostrum be *inert*, a reliance upon it may destroy life—if *active*, that while it may relieve or even cure a few, it will kill many more? We would charitably believe, that most of these certificates are given, without due reflection. The majority of them are for cough mixtures, balsams, boluses or lozenges, which are presented as infalliable remedies, without reference to the nature of the diseases in the lungs, by which the cough is produced. But the diseases of the lungs are of various kinds—requiring different modes of treatment—and what may cure one patient will destroy another. If a clergyman, then, has seen a quack medicine relieve one individual, he is not justified in generalizing, and commending it to all who may, from the coincidence of a single symptom, fancy themselves in the same condition.

Medicine is an inductive science, the basis of which is a knowledge of the structure and functions of the human body. He who builds on this foundation, rests his superstructure on a rock—all others build on sand. How many of our clergymen understand anatomy and physiology, beyond Dr. Paley's Natural Theology? We suspect very few. We would ask these respected brethren, what they mean by orthodoxy? Is it not a full acquaintance with the letter and spirit of the Bible, and a faithful adherence to both? Now medicine, so to speak, has *its* orthodoxy, which consists in a profound knowledge of the principles of the science, and a reliance on them to guide us in practice, as the divine relies on the doctrines of the Bible to guide and govern him in preaching. If some ignorant layman, but superficially acquainted with that divine revelation and unimbued with its spirit, were to advertise a new exposition of its doctrines—a sort of patent mode of securing heaven, what would our clerical friends say, if physicians who had never made the Bible a study, were to certify to the truth and efficacy of such a pretended discovery? They would, undoubtedly, warn the people to beware. It would be a dereliction of duty for them to remain silent; and we, on the other hand, feel, that duty in reference to the health and temporal welfare of the community, commands *us* to speak out, in words of warning to the people, and to rebuke such of their spiritual leaders, as travel out of their profession, to enlist under the banner of quackery in another.—*Western Journ. of Med. and Surg.* Sept. 1841.—*From Am. Jour. Med. Science.*

Dental and Surgical Instruments.—An opinion is entertained by some, that the manufacture of surgical and dental instruments has been brought to much greater perfection in Europe than in America, but this, we believe, is not well founded. There is no description of surgical operations, which, in their performance, require more finely tempered or highly finished instruments, than those that pertain to the teeth, and we have had frequent opportunities of comparing the instruments employed for the performance of these, manufactured at some of the first cutlery establishments in Europe with those manufactured in this country, and for excellence, both of temper and finish, we have no hesitation in pronouncing the preference to be due to the latter. We have cutlers in Philadelphia, New York, Baltimore and Boston, whose skill in the fabrication of surgical and dental instruments, we believe, to be unsurpassed. For the procurement of these, therefore, there is now no necessity for sending abroad. We had a pair of lower molar forceps presented to us a few days since, and there is no dental instrument, in the manufacture of which cutlers have more frequently failed to produce such as were really good, than this, made by Messrs. Daily & Arnold of Baltimore, that surpasses any thing of the kind we have ever before seen.

[*Balt. Ed.*

Philadelphia Agent.—Dr. Roper, of Philadelphia, has kindly consented to act as agent for this journal in that place, and is authorised to receive subscriptions, and will hereafter see that the subscribers there are supplied with it as soon as it is issued from the press. Heretofore, we have had much difficulty in getting a suitable person to act as agent in that place, and in consequence, have received complaints from subscribers there on account of not having received the journal regularly. We trust there will be no cause for this in future.

Acknowledgment.—Received from the author for the American Society of Dental Surgeons, *Three Memoirs on the Development and Structure of Teeth and Epithelium,* read at the ninth annual meeting of the British Association for the encouragement of science, held at Birmingham, in August, 1839, with diagrams exhibited in illustration of them. By Alexander Nasmyth, F. L. S., F. G. S. member of the Royal College of Surgeons, &c. London, 1841.

C. A. Harris, *Cor. Sec. A. S. D. S.*

Diseases of the Gums.—In the present number of the Journal, will be found an article on "conjoined suppuration of the gums," by Dr. H. H. Hayden, whose request with regard to the publication of a paper on the same disease, but denominated the "devastating process," by Dr. Koecker, we shall with pleasure comply with. Dr. Koecker's views upon the subject, as contained in the paper here alluded to, will appear in the regular course of the publication of his "Principles of Dental Surgery," in the library part of our next number. From the extensive experience and well known professional abilities of both these gentlemen, we doubt not that what they have said upon this highly important and interesting subject will be read with much interest. Their opinions are certainly entitled to high consideration, and although they do not altogether agree concerning the curability of the disease, they are both evidently well acquainted with its pathology.

Answers to Questions of a Correspondent.—Applicants for admission to membership into the "American Society of Dental Surgeons," must establish by one or more of its members, that they are well informed in the theory and practice of dental surgery, and possessed of an unexceptionable moral character. A written statement to this effect, when the member or members making it are not to be present at the next ensuing meeting, sent or handed to either of the secretaries, or any of the members of the executive committee, will secure to the applicant his election to membership into the Society. But in the absence of this evidence of his worthiness, an examination by a committee appointed for the purpose, and the presentation of samples of his operations are required.

Our opinion in regard to the galvanic action excited by the attaching of clasps and artificial teeth to gold plates by means of gold solder, and also in regard to the substitute proposed by Mr. Brockway is expressed in a note to an article headed "galvanism," by Mr. G. G. Brewster, in the second number of the second volume of the journal, page 191, to which we beg leave to refer our correspondent.

We do not think there are any cases in which the filling of teeth with an *amalgum of mercury and silver*, is justifiable. We have had an opportunity of seeing, perhaps some hundreds of teeth that had been filled with it, and we do not recollect to have met with a single instance where it had been used in which some obvious injurious effect had not resulted from it. We have, it is true, met with a few cases, and it has only been a few, where teeth that had been filled with it but a short time, in which no direct injurious action had been produced upon the subjacent bone, but even in these cases, it had obviously exerted a vitiating influence upon the fluids of the mouth and given rise to an unhealthy action in the gums.—*Balt. Ed.*

Married.—On Monday evening, February 7th, in Baltimore, by the very Rev. Dr. Moriarty, LEWIS ROPER, M. D. second Vice-president of the American Society of Dental Surgeons, of Philadelphia, to ROBINA FRANCIS, daughter of Thomas Hillen, Esq. of the former place.

Obituary.—Died in Hamilton village, on Tuesday morning, 30th ult. after a short illness, of gastro-enteritis, J. ROLIN ROOT, Dentist, aged 30 years.

Mr. Root had been but between one and two years a citizen of this place; but in that short time, by his peaceful and friendly temper, his strict integrity, his suavity of manners, and his faithfulness and skill in his profession, he had rapidly succeeded in securing the good will, friendship and confidence of the community. His untimely death will be deeply deplored as a public loss, by a numerous circle of acquaintances and friends. He has left a wife and an infant child.—*Palladium.*

THE AMERICAN

JOURNAL AND LIBRARY

OF

Dental Science.

VOL. II.] JUNE, 1842. [No. 4.

ARTICLE I.

A Treatise on Mechanical Dentistry. By SOLYMAN BROWN, M. D., D. D. S.

(Concluded from page 247.)

CHAPTER III.

Of the insertion of entire sets of artificial teeth, both upper and lower, on plates of gold, without clasps or springs.

61. It often happens, in this age of luxurious refinement, effeminate ease, and unnatural alimentation, that persons of both sexes, and of all classes of society, lose successively every tooth in both jaws; but more frequently in the upper maxillary arch. The dental operator who understands his business, although he deplores the folly or misfortune of his patient, is never more confident of ultimate success than in treating cases of this description, when he is permitted to exercise his best judgment in the employment of his utmost skill on the most suitable materials. As there is no longer a necessity of attaching his work to other teeth, which are liable to be soon removed either by decay or dislocations, he can construct an entire set of teeth, set upon a strong plate of gold, which shall fulfil all the reasonable expectations of the patient in regard to appearance, speech and mastication, and which shall moreover be so durable in its character as to render the annual expense of small amount for many years to come.

62. To secure entire success in the fabrication of these entire sets of artificial teeth, the utmost care must be taken to remove all the roots of the natural teeth, and to bring the gums and adjacent parts into a perfectly healthy condition. In ordinary cases, time alone, without any sanatary remedies, will effect this object, provided a sufficient period be allowed after the removal of the natural roots. Not only must the cavities which the roots occupied be wholly filled up, but the alveolar processes must be thoroughly absorbed, so that no material changes shall occur after the wax impression shall have been taken, from which the working models are to be made.

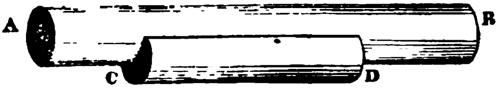
63. It is impossible to prescribe definite periods for all the cases that may occur in a promiscuous practice, during which this healing process, together with the absorption of the bone, will be perfected. Much depends on the age, habits and health of the patient, and not a little on the circumstances under which the natural teeth are shed. In some subjects, the alveoli are nearly or wholly absorbed, before the roots of the natural teeth lose their hold upon the integuments: in others, several sound teeth are extracted, around which the alveoli were perfectly preserved. From all these causes it must be evident, that each distinct case, possesses an idiosyncrasy of character peculiar to itself, and must be treated accordingly. It is proper to say here, that a few weeks will be sufficient for the preparation of some mouths for taking an impression; whereas, months will be required in a majority of instances.

64. When the operator becomes convinced that the gums are well healed and settled, and that no further changes are to be feared, which will endanger the permanent and complete success of the operation, he should procure very ample metallic cases to contain his wax, so that the impression may extend to every part of the maxillary arch on which the plate must rest; taking care that the wax shall reach the extremity of either jaw towards the angle of articulation, and spread itself over at least two-thirds of the palatial concavity, when the upper teeth are to be restored, and moreover, that the wax come foward on the labial side of the arch as far as the muscles and integuments will permit. In taking these large impressions, let the wax be pure and without any

admixture of olive oil, and just soft enough to receive the impression without too great pressure on the parts, and yet not so soft as to be injured while withdrawing it from the mouth. The proper consistency of the wax and the necessary shape and strength of the metal case, which contains it, are of great moment in the attempt to secure a satisfactory result; but in this case as in many others, experience is the only competent instructor.

65. Inasmuch as the pieces which I am now describing, are those which by some have been called "suction plates," and by others are said to be retained in position by *atmospheric pressure*, I deem it proper in this place, to express an opinion on the subject, resulting not only from conversation with distinguished dentists, but from years of personal experience and observation, during which I have had occasion to inspect pieces of this description constructed by some of the most distinguished artists of both hemispheres.

66. One result of my inquiry and observation has been, that few pieces of this kind are fixed firmly upon the gum, and used successfully for purposes of mastication, by mere suction, or atmospheric pressure, without any aid from the tongue, lips, cheeks, and antagonizing jaw. There is indeed, in favourable cases, a very firm adhesion of the plate to the subjacent parts after it has been some time worn, and thus closely fitted to the gum and palate. But this adhesion which is that of two well adapted surfaces, from between which the atmosphere is excluded either by impact, or by liquids, or both combined, could never be effected unless the plate were held firmly in its place, for a season, either by the bold relief of the alveolar projection, or by the lips, tongue, teeth and opposing jaw; and in fact, these surrounding parts—together with the contained convexity of the projecting gum, contribute not merely *partially*, but *mainly* to the preservation of the piece in its just position. The manner in which the surrounding parts operate to secure such a plate *in situ*, are too well know to need any illustration even to the youngest student of our art; but the manner in which the bold *bas relief* of a prominent alveolar projection, may and often does operate to sustain a plate, from beneath which the atmosphere has not been excluded, shall be explained by a simple diagram.



Let *A B* in the above figure, be a cylinder of wood, metal or any other substance, not more yielding than the alveolar ridge of the human mouth when denuded of its teeth; and let *C D* be a plate of metal so bent as to embrace the cylinder firmly in the parts adjacent to its two straight sides. It is very manifest, that such a plate might be sustained very firmly in its connexion with the cylinder, even though a stratum of air of any supposable thickness intervened between the cylinder and plate.

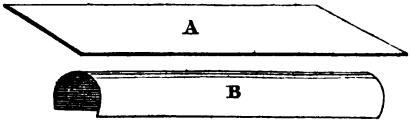
It is indeed quite certain, that the firmness of this adhesion would be much increased if the cylinder were so fitted to the plate, as that the air were wholly excluded, and this only proves what I wish to impress strongly on the mind of the dental student, that even when all other circumstances are most favorable to the success of his operation, the perfect adaptation of plates like this to the subjacent parts, is of the utmost importance. The fact that a *perfect fit*, as it is called, excludes the particles of food, and also renders the plate more tolerable to the tongue, would of itself impel every neat and finished operator, to give to his plate the best possible adaptation to the parts beneath.

67. Another fact, with which observation has furnished me, is, that inasmuch as the lips and cheeks contribute greatly to the stability of the position of an entire set; the artificial teeth should extend as far back as possible on the plate, in order to present as large a surface as convenient to the sustaining action of the muscles of the cheek. For a similar reason, the portion of the gold plate resting upon the palate directly over the tongue, in what is vulgarly called the roof of the mouth, should be as broad as circumstances will permit, in order that the superior surface of the tongue may lend its important aid, when required, in sustaining the artificial fixture in its place.

68. Experience and observation teach moreover, that the gold plate must pass upwards as high as the muscles will permit, on the anterior and outer surface of the gum, between the cheeks and the maxillary arch. This not only increases the surface, thereby augmenting the force of adhesion, but it assists in prevent-

ing the plate from moving either laterally or backwards, in the act of mastication.

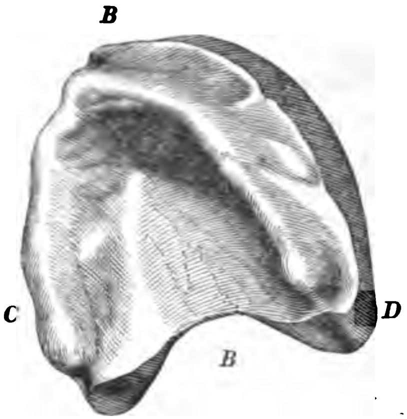
69. A proper thickness of the gold plate is matter of primary consideration, in these entire sets of teeth; and the thickness must vary in the direct ratio of the flatness or prominence of the alveolar ridge. The rule invariably is, that the plate shall be as light as is compatible with the strength required. Very flat gums require thicker plates than those which are more convex and protuberant, on the simple principle that a flat ribbon of metal of any given breadth and thickness, will bend in the direction of its length more readily than the same plate bent laterally into the semi-segment of a hollow cylinder.



If *A* represent a flat metallic plate of any length and breadth, and *B* a cylindrical plate of equal dimensions, the strength of the latter will be many times greater than that of the former, in proportion to the convexity of its curvature. Hence it follows that the deeper the convexity of any gold plate for the mouth, and the broader its superficial area, the thinner may be the plate. And on the other hand, when the plate is narrow and flat, it must be increased in thickness until it shall possess sufficient strength to resist the ordinary forces to which it must be necessarily subjected.

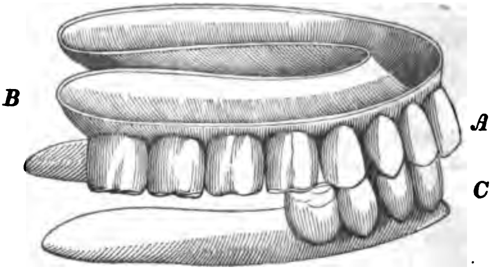
70. Since, as we have already said, every plate worn in the mouth should be as light as the strength demanded will permit, we have another among many solid reasons for preferring gold to any other metal for setting artificial teeth. Platina would resist the action of corrosive agents better than gold, but a much greater weight and bulk of this metal would be required, to give the strength of a similar gold plate.

71. The following is a drawing from a cast of one of the most prominent gums, to which I have been called upon to adjust a suction plate during the period of my professional practice.



The depression at *A* below the prominence at *B C D* is full three-fourths of an inch. To a mouth like this there can be no difficulty in adjusting a suction plate with the most perfect success. If the model be correctly taken, the plate rather thin, and proportionally broad, it will require no more than ordinary mechanical skill to construct a piece which will remain firmly in its place, even in the act of masticating the hardest kinds of food.

72. But the ability of such a piece, to sustain the office of an implement of mastication, depends greatly on the position of the teeth which are set upon it, and on the manner in which they meet those of the lower jaw. If the front incisors should be set too far forward on the plate, and if there should be no molar teeth in the lower jaw to countervail their action on the lower incisors, it will be manifest that the whole will be thrown forward, in closing the mouth.



In the cut here given, if we suppose the upper incisors at *A*, to strike wholly over and in front of the lower incisors at *C*, inasmuch as there is nothing to sustain the point of the plate at *B*, it will inevitably fall away from the gum, whereupon the whole will be projected forward whenever the mouth shall close, and render the piece useless. Such an arrangement could be made available only by supplying the deficiencies in the lower jaw. If this is not done, the front teeth of the artificial piece must be removed backward until they strike perpendicularly upon the lower incisors, in which case the centre of gravity of the artificial piece will in most instances, be so supported as to render the work available for all the important uses to which the teeth are usually applied.

73. After the dental operator has formed his plan as to the position which he wishes the teeth to assume on the plate, and also as to the manner in which he intends the substitutes shall meet the natural teeth of the lower jaw, the best method of proceeding is as follows: After striking the plate as heretofore described, and after fitting the gold backs to the teeth which have been selected for the purpose, cover the outer surface of the plate which may be called the *lingual* surface, with softened beeswax, equal in thickness to the length of the teeth, and adjust the teeth as nearly as possible in the required position, taking care to grind each tooth down to the plate with the greatest accuracy, in such manner that the gold back of each tooth shall touch the plate. There are some advantages, in certain cases, in using sealing-wax instead of beeswax, in thus temporarily attaching the teeth to the plate. When this is used the flame of a lamp or candle may be employed to melt the wax as it shall be needed for each tooth.

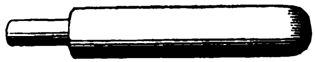
74. In this stage of the progress, try the whole into the mouth of the patient and correct the position of the several teeth so that in all respects they shall stand as desired. This process of adjusting will be readily effected, while the wax is preserved by heat in a softened state. When all the teeth stand exactly as all parties desire, remove the whole from the mouth carefully, and encompass all the teeth, together with the plate, with plaster of paris, leaving the wax uncovered. When the plaster shall become thoroughly hard, immerse the whole in warm water, in order to soften the wax, or cut it away with a penknife, leaving the teeth and plate firmly imbedded in the plaster. In this as well as other cases where the plaster must be subjected to the action of the

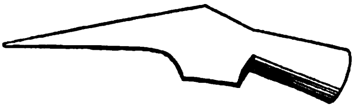
blow-pipe, sand should be mixed with the plaster to prevent its cracking, or if this precaution should have been neglected, the plaster may be encompassed with a few turns of fine iron wire, as already directed.

75. After the gold plate and backs of the teeth have been divested of the wax, they should be well washed in clean water, when the piece will be ready for soldering. In large pieces like this, where great strength and durability are required, the utmost care must be used to employ solder enough not only to render the work beautiful, but to give the stability required; for, as I have already remarked, a good piece of work never gives way at the junction of the plate with the backs of the teeth, inasmuch as that is by far the strongest part of a good piece. In soldering large plates of this sort, the flame of the blow-pipe should be applied cautiously at first, and afterwards augmented gradually till the whole mass is heated to redness; after which a concentration of the jet of flame should be brought to bear upon the back of each of the teeth successively till the solder has all assumed the desired form and position, throughout the entire range. After cooling, cleaning, and polishing, the piece will be ready for insertion.

76. As the cleaning and polishing of such large plates, is an important operation as regards their beauty, I will recapitulate the process, and describe it a little more minutely than I have yet done. When the piece has been boiled for a few seconds in diluted sulphuric acid, or suffered to lie a few minutes in diluted muriatic acid, without boiling, let the edge of which rests on the palatial arch be a little bent upwards by the use of a small riveting hammer, while the plate rests on the end of a steel rod half an inch in diameter, rounded at the end in the form of a hemisphere.

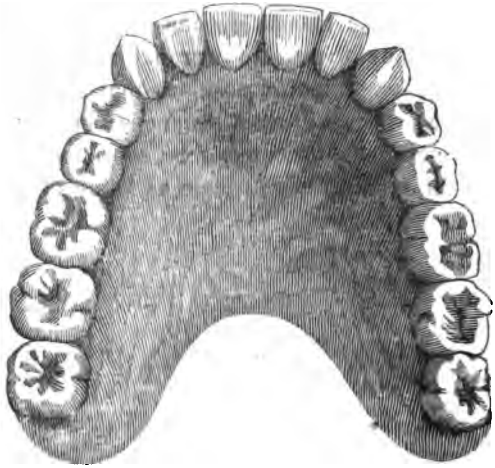
The shape of the rod, and the form and size of the hammer, are represented in the following wood-cut.





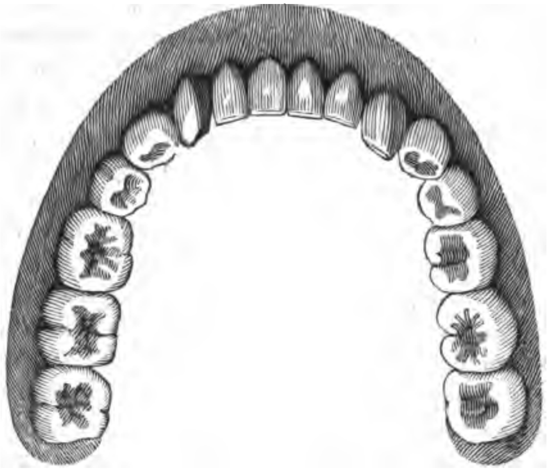
The sharp and broad edge of the hammer must be applied with repeated strokes and a skilful hand to the lingual side of the inner edge of the plate until it shall effect the object to the extent desired. There is but one method of avoiding the necessity of this operation, which is to pare away the plaster cast upon which the metal casts are to be made, along the inner edge of the plate, so that the plate in being struck between the metal casts, shall be properly bent upwards without the use of the hammer afterwards. This trimming of the cast, however, will be more difficult than the method first described, especially to the inexperienced.

77. Let the plate in the next place be filed very smooth, in all parts, commencing with coarser gold-files and finishing with very fine ones. In the next place, rub the plate smooth with a silversmith's polishing stone, which may be cut with a fine saw into any shape desired. After this, use rotten-stone and sweet oil, applied with leather attached to the end of a piece of soft wood; afterwards apply dry Spanish white, crocus, or rouge, and finish by washing in clean water. To those portions of the plate which cannot be reached with the leather, the above-named substances may be applied on threads of silk, flax, hemp or cotton. When threads are thus used they may be fastened at both ends to some fixed points in the manner of the horse-hair of the bow of a violin, and motion may be given to the piece along these filaments to which the polishing substances have been previously applied. When the whole is finished and ready to be inserted in the mouth, it presents the following appearance.



78. It sometimes happens that the maxillary ridge is so flat, that the action of the lips, cheeks and tongue, together with the slight degree of adhesion which takes place when the plate is first inserted, are incapable without a little practice of keeping the piece in its place, whereupon being left to the action of gravitation, it falls whenever the mouth is opened. To remedy this difficulty which is removed by a little experience, and which is felt less and less as the gum becomes adapted to the plate, it is sometimes necessary to wear a piece of soft leather, either that of the chamois goat, or well-dressed lambskin, cut to the exact size of the gold-plate, and moistened with water. By this means the adhesion is promoted to such a degree, that the piece may be worn with little comparative difficulty. It is often true, in the case of aged persons, that the alveolar processes become so completely absorbed, and the parts upon which the plate must rest, so nearly flat, that the difficulty of wearing a suction plate is greatly increased. In such cases the use of springs must be adopted, such as will be hereafter described, or the patient must dispense with artificial teeth altogether.

79. As the foregoing description of a suction plate, is applicable only to the upper jaw, inasmuch as the principle of cohesive attraction or atmospheric pressure, does not apply to any great extent, to plates worn upon the narrow alveolar ridge of the lower jaw, it may be proper here to remark, that the attraction of gravitation necessarily operates in some degree to counterbalance this defect in the lower plates. These pieces will of course remain in their places by gravitation alone, provided the food, the tongue, the lips, and the cheeks do not displace them. But all these causes are so apt to render lower plates useless without some artificial means to keep them in position, that I shall deem it necessary to employ springs in most instances; but as there are a few cases in which under pieces can be worn without springs, I shall present a drawing of one of them as follows:



80. In these plates for the under jaw, the whole process of construction, will be similar to that already described, with the difference, that as the edges of the plate must approach as near as possible to the muscles on either side of the alveolar ridge, without wounding them, and as the plate at least can be but narrow, it become imperative that it should be much thicker than plates for the upper jaw. This increased thickness will both impart the required strength, and present a less trenchant edge to the muscles and integuments that necessarily move upon it. There is an excellent method of removing this difficulty of the sharp edges of the lower plate, when the condition of the mouth will admit of it. In many cases the absorption of the parts becomes so considerable, as to leave sufficient room in the mouth, to construct the lower plate *double,* especially that portion of it which pertains to the back part of the mouth, sustaining the molar teeth. The following method of procedure will enable the operator to construct a double plate with facility. After the ordinary plate has been completed agreeably to directions already given, cover the upper or lingual surface with beeswax, and mould or cut it into such form as shall represent the exact position which it is desired that the upper plate shall assume. Lay the whole on the tin-cast upon which the plate was struck, and after oiling the surfaces of the wax, plate and mould, with olive oil, cover the whole with plaster, suf-

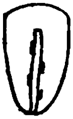
ficiently thick to give it the required strength. This will form the basis of a new set of metallic castings, upon which a second plate may be constructed, which being soldered to the first plate, and carefully filed and polished, will present very smooth and cylindrical surfaces to the tongue, cheeks and lips. This sort of double plate, which has long been familiar to the profession, is quite unlike those patented machines of modern invention, provided with flute-holes like the lamprey, for the storage of all kinds of filth, both solid and fluid, which can be collected from the mouth, fomented by heat, and rendered execrable by fermentation. But as these portable nuisances have gone, for the benefit of posterity, to the tomb of the Capulets, I have resuscitated their memory merely to say, that those double plates which I here recommend, in certain cases, are wholly unlike them, inasmuch as they are merely air vessels, and not depositories of garbage. One advantage of these double plates for the lower jaw, in addition to that already mentioned, is that they enable the artist to use teeth of uniform length, giving greater symmetry and beauty to the work—and besides this the strength of the piece will be augmented many fold. It should be moreover known to the profession generally, that the market is now supplied with *gum-teeth*, as they are technically called, of great beauty, which are very useful in those cases of considerable alveolar absorption, where double plates are not employed.

81. Before entering upon the subject of double sets with springs, which will engage our attention in the next chapter, it may perhaps, be useful to the student to say a few words in relation to the several kinds of mineral teeth which have been offered to the profession from time to time by the principal manufacturers of Europe and America. Until a few years ago the French dentists took the lead in this branch of manufacture, and supplied not only their own country, but foreign markets. If we are to judge of the French teeth from the specimens sent to this country while there was a demand for them, it must be confessed that although the material of both the body and the enamel, was exceedingly well calculated to resist the action of the blow-pipe, and although they were in some instances well coloured, yet as to beauty of form and the method of attachment to metallic plates, they were vastly

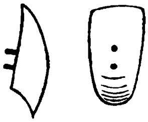
inferior to those of American fabrication which have now wholly supplanted them. And in relation to two of these points of superiority, I am compelled to acknowledge that I have never yet seen any artificial mineral teeth, so elegantly formed, and colored so perfectly to nature, as those manufactured by Mr. C. Ash, of London, who has kindly forwarded to me a few sets to be exhibited next summer at the meeting of the American Society of Dental Surgeons in Boston. But, as these teeth manufactured by Mr. Ash do not resist the action of the blow-pipe in such a manner as to be capable of being soldered to plates with solder of sufficient firmness to resist the action of the fluids of the mouth, I am confident that some of our American dentists, among whom I am happy to rank Mr. Samuel W. Stockton, of Philadelphia, and Mr. James Alcock, of New York, have presented to the profession the best specimens of incorruptible teeth, of which we have any account in the history of our art. And yet when I contemplate the undeniable superiority of the teeth fabricated by Mr. Ash, of London, as regards beauty of form and perfection of coloring, I cannot allow myself to doubt that higher points of perfection are still to be attained in the production of this species of manufacture, as regards all those particulars in which the teeth now in market are found deficient. There is scope enough to call into activity the energies of the most exalted genius, and a field in which enterprise and perseverance will reap a harvest of gold, when the profession confess that they are wholly satisfied with the quality of this article now so essential to the perfection of our art. But I should esteem myself chargeable with manifest injustice and ingratitude towards those who have done so much for the improvement of mineral teeth, for having spoken thus of the defects of the present fabrics, did I not also express my joy and astonishment that so much has been done already during the present century for this manufacture.

82. Of the various modes of constructing what are technically called *plate teeth*, I shall deem it necessary to introduce but three on this occasion, as being the most conspicuous among the many kinds in vogue.

The French plate teeth so long as they continued to come to our market, were constructed as follows:



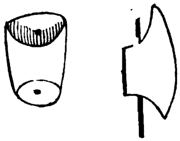
Each tooth had a longitudinal groove on its posterior surface, with three points or pivots of platina set firmly in the body of the tooth during its fabrication, to which a gold or platina wire might be soldered. To this wire when ground to the level of the surface of the tooth, a metal back was to be attached by soldering. Teeth thus constructed possess a good degree of strength, but are not easily replaced in case of accident, and therefore the dentists of the United States adopted the following improvement.



Two small platina pivots of wire, are inserted firmly in the body of the tooth during the manufacture, designed to be inserted into two corresponding holes in the metal plate. These pivots can be both rivetted or soldered to the metal backs. Dr. Harrington, of Philadelphia, has recently secured a patent for an improvement in these pivots, which consists in forming a head on that end of the pivot which is inserted into the tooth, as well to prevent it from being drawn out, as to enable the tooth to sustain the strokes of the rivetting hammer. In the fabrication of the American teeth just described, many individuals of eminent mechanical genius, have been for some years ardently engaged. Many of these dentists manufacture only for their own use, and succeed in producing teeth of good quality. Among those who have manufactured for the market, Mr. S. W. Stockton, of Philadelphia, has been most generally patronized, and has received more frequently than any other individual, the medals and diplomas of the American Institute. Mr. James Alcock, of New York, has also succeeded, after years of persevering experiment, in fabricating beautiful teeth, and has likewise obtained the medal of the Institute.

83. The only remaining kind of mineral teeth of which I propose to speak, is that from the manufactory of Mr. C. Ash, of

London. His teeth differ from those already described, in having a central, longitudinal cavity or orifice, bushed with gold, for the reception of a pivot of the same metal, as follows:



One of the advantages of this method of construction, is that teeth of this kind are adapted as well for insertion on roots as on plates of metal. Their great excellency is their surpassing beauty of form and colour; and when these properties can be made compatible with a material capable of resisting the action of the blow-pipe, little will be left to be resolved by future generations in the problem of constructing artificial teeth. But the period when this desirable object will be attained, is left to conjecture, and I deem it not too much to say that, the fortunate individual who successfully resolves this difficult problem and unites the separate excellencies of those three kinds of teeth, will not only insure to himself and his family an ample fortune, provided he conduct the exclusive manufacture with spirit and skill, but will deserve the general thanks of the profession and the gratitude of mankind.

[TO BE CONTINUED.]

ARTICLE II.

A Dissertation on the Diseases of the Maxillary Sinuses. Presented to the Faculty of the Baltimore College of Dental Surgery, by W. W. H. THACKSTON, candidate for the degree of Doctor of Dental Surgery. Baltimore, February 14, 1842.

IN treating upon the diseases of the *Antra Highmorianum*, it may not be improper to examine the relation which these cavities sustain to the surrounding organs. To this end I deem it unnecessary to go into a minute detail of the anatomy of the parts, but will content myself, with merely noticing the most prominent and important features, as they present themselves.

They (the maxillary sinuses) are found in each superior maxillary bone, the palatine and alveolar processes forming their floors, the orbiter processes constituting their roofs, the cheeks their external, and the nasal plate of the superior maxilla their internal parietes. In the nasal plate is found a hole, through which the mucous secretion of the antrum is discharged; these sinuses are lined by a continuation of the schneiderian or pituitary membrane of the nose. There is then between them, the nose, the organ in which the sense of smell is located, and through which the process of respiration is principally carried on, immediately above them, the organs of vision; and below them, those of mastication. From this hasty glance at the important organs, contiguous to the antral sinuses, the importance of the various diseases to which they are subject may be appreciated, and the injury that may result from them, to the parts, above mentioned. I do not at the present time propose taking up all the diseases incident to these cavities, but only to examine in detail those which are most frequently met with. I shall however at the same time take a hasty glance at some of those forms of disease, which occasionally develope themselves in one or both *antra*, and which are dependent upon a specific constitutional diathesis.

The various forms of *carcinoma* as *fungus hœmatodes, &c.* belong to this class, and by a reference to the pathology of these affections it would seem that after their full development, (and it is rarely till then that they attract attention) it is seldom that any advantage results from interference with them. In the first or almost inceptive stage, when the local affection consists of nothing more than a small circumscribed tumour, its total eradication, together with all the contiguous parts which may be at all affected, will sometimes cure the disease and afford the patient an opportunity of dying of some less loathsome and horrible malady. But the same tendency which at first determines its development, still exists, and the constitutional vices upon which it is dependent often lurk too securely in the system to be reached or eradicated by any means with which the art of medicine is at present possessed. In a large majority of instances, therefore, those who are so unfortunate as to possess constitutional vices of this kind must be resigned to the melancholy fate which awaits them,—experience having demonstrated, that after the full development of a *fungus hœmatodes*, or carcinomatous ulcer, though by active and persevering treatment its progress be arrested in one place, it soon makes its appearance in another.

Of the diseases which more particularly claim my attention on the present occasion; I shall first notice *Muco-Purulent Secretion*, or as some have denominated it, dropsy, and others, abscess of the antrum. This is by far, the most common affection to which the maxillary sinuses are liable. This disease consists of nothing more than the name implies, a vitiated or altered state of the mucous secretions. It will be readily perceived from the propinquity of the parts and the continuity of structure which exists, that most causes tending to induce a morbid action in the mucous tissues of the mouth and nose, may readily extend their effects to the parts now under consideration. Thus, the irritation produced by common catarrh, may, and does very frequently extend itself to the antrum, causing a thickening of the lining membrane, so much so as occasionally to obliterate the nasal opening; the increased secretion consequent upon the inflamed or irritated membrane thus becomes pent-up, vitiated, and in turn, the exciting cause of a high state of inflammation, which not unfrequently results in the suppuration of some of the mucous follicles, and sometimes in the destruction of some part of the membrane, when a necrosis and perhaps exfoliation of the subjacent bone ensue. In the meantime the accumulation of purulent matter increases, until the cavities no longer capable of containing it, are enlarged or broken down by the yielding of some part of their bony parietes. I am, however, induced to believe, that this affection more frequently results from the irritation produced by the presence of diseased or dead teeth than from any other cause.

In the first place it is not perhaps in more than one case out of twenty that it is met with unattended by a diseased state of the subjacent teeth, and in few instances I believe, would any other treatment than the restoration or removal of these organs, be required to effect a cure. Another circumstance which goes strongly to sustain the views which I have taken, as to the most common cause of this affection, is the very great difference in the liability of the frontal and maxillary sinuses to diseases. These cavities are analagous; they are lined by the same membrane, and apart from the absence of diseased teeth. I can conceive of no circumstances which could render the former less liable to disease than the latter, unless it be that the outlet for the secretion is more favourable to its discharge in one instance than in the other, but this may be considered as questionable. But if it is admitted, the fact that irritation and inflammation precede all other diseased actions in these parts, and if these cause an obliteration of the nasal openings of the maxillary sinuses, would they not also be likely to cause the openings into the frontal to close, and their secretions become vitiated and as acrid as those of the antrum? Yet this rarely happens, while on the other hand, so common is the affection of which I am treating, that few in the profession, have not had opportunities of meeting with it.

It is asserted by some, that the fangs of the first and second superior molares penetrate the sinuses; but this is denied by others; that is, in the natural state of the parts. As to the various opinions entertained upon this subject, it is not necessary for me at this time speak: of one fact however, I am very certain, and that is, in no instance, does anything more than a thin spongy layer of bone intervene; through which a diseased action may be readily communicated, from the fangs of the subjacent teeth, to the membranous tissues of the antrum. As to the manner in which the fangs of the molares, are made to perforate the antral cavities, (as they frequently do) whether it be natural, or the result of diseased action: I shall for the present, leave for others to determine.

The symptoms of muco-purulent secretion, when produced by catarrh, are generally slight temporary uneasiness, perhaps pain, of a dull heavy character, which readily passes off upon the application of a few leeches to the cheek, followed by anodyne fomentations, or the injection of some bland fluid into the sinus, through the nasal opening, if practicable. For this purpose tincture of myrrh diluted with tepid water, will, in most instances, be all that is necessary. But where the disease evidences a disposition to take on a more aggravated form, the dull heavy pain increases, occasionally lancinating paroxysms shoot from the maxillary tuberosity to the upper and interior part of the nose, the pulse is hard and hurried, the bowels constipated, the cheek becomes turgid, sometimes spots or blotches of a florid colour appear, great pain is experienced on pressing the parts, and unless the disease be speedily arrested, yielding of the bony parietes will ensue, or perhaps necrosis from the death of the periosteal tissue; from which the osseous tissue derives its support. Where the nasal duct remains pervious, the symptoms may vary considerably from those just described, the disease may remain for a considerable time without any other perceptible change than an increase or diminution of the discharge. In debilitated or strumous constitutions these latter symptoms not unfrequently result in the necrosis, and subsequent exfoliation of parts of the bony parietes of the sinus. Where an enlargement of the cavity or yielding of the walls occur, it is most frequently in the direction of the nose, closing, not unfrequently the nostril of the diseased side. Where a yielding of the alveolar and palatine processes occur, the gums become spongy, turgid, and ulcerated, the teeth elongated and displaced, and unless a perforation be made and the contents of the antrum evacuated, an exfoliation, with perhaps sloughing of the soft parts will soon ensue. If the nasal opening should not become pervious, and the health of the parts restored, the opening formed by the disease, or the operator, as the case may be, will become fistulous.

The treatment of this affection in its first or inflammatory stage will consist in the removal of all sources of irritation. To accomplish this, the mouth should be carefully examined; and all fangs, and teeth incapable of perfect restoration to health, should at once be removed, as should also all accumulations of a morbid character, from the healthy ones. The cheeks should then be leeched and fomented, and if practicable, some bland fluid should be injected through the nasal duct; the bowels at the same time should be opened by saline purgatives.

If the disease still continues unabated, the accumulation and situation of the secretion go on, and the nasal opening closes, a somewhat different course of treatment will be indicated. An opening into the diseased sinus, should first be formed. It not unfrequently happens that on removing the diseased teeth and fangs, which are almost uniformly met with in this affection, a communication is found to have been established between the socket of some one of their fangs and the antrum, this communication if not of a sufficient size, should be enlarged. Where there are no diseased teeth or fangs, a healthy molar tooth must be sacrificed; the second is the one usually selected, as it is situated under the most dependent part of the *sinus* and is very accessible to the operator. The perforation, *ceterus paribus,* should be made through the anterior external alveolus, but it may be made through either of the alveolar cavities of the fangs of the first or second molares, the bicuspides, or cuspidati, though a much thicker table of bone will have to be penetrated when the perforation is made through an alveolus of any of the other teeth.

From the difficulty of access, and the peculiar situation of the *dens sapientiæ,* it would be obviously improper to attempt the operation through its socket.

The manner of performing the above-mentioned operation, is simply to introduce a trocar into the alveolus selected, and with the hand properly guarded, to prevent injury to any of the parts, by the sudden or unexpected entrance of the instrument into the sinus, gently rotate it, until the cavity is reached, which in most instances will be very soon, as the intervening osseous layer is not only thin, but generally spongy and soft. On reaching the cavity and withdrawing the instrument, a gush of matter ensues, generally of a thick, fetid character, though in this respect it is variable; the state or quality of the pus depends entirely upon the changes which have been effected by the disease. Where the operation has been early performed, the discharge may only be thickened, clouded, and nearly inodorous, but when it has been deferred, the matter long confined, and portions of the lining membrane destroyed, attended with caries or necrosis of the bony parietes, the matter will be found to have assumed a thick, viscid, and intolerably fetid character. As there is always considerable irritation produced in the parts by the operation, it will be proper to open the bowels with gentle aperients, and to apply a few leeches to the cheek, or take a few ounces of blood from the arm. The sinus should at first be injected with some mild, bland fluid, as tepid water, or tincture of myrrh, diluted with tepid water or sweet milk. The strength of the injections should be gradually increased, being at the same time careful to avoid having them strong enough to light up inflammation in the lining membrane; yet they should be always sufficiently strong to stimulate the parts;

and Mr. Bell says, "to leave a sensation of heat an hour or two after their employment."

The remedial agents used in this affection are numerous and various, the most efficient of which are tincture of myrrh, port wine diluted, or otherwise, solution of the sulphate of zinc, in the proportions of from two to eight grains to two ounces of water; argent. nitratum, one grain to two or three ounces of water; these may be strengthened or diluted as occasion may require.

The treatment which we have detailed, if persisted in, if the system be favourable to the local treatment, (and this should never be lost sight of, for the successful treatment of all local affections depends materially upon it,) will generally establish a healthy action in the maxillary sinuses, if they be not affected with any other disease, than muco-purulent secretion, or as it is more frequently denominated, abscess. It may here be observed, that the nasal duct almost always becomes pervious after the membrane regains its healthy action, the artificial perforation should then be permitted to close, and not before; and to prevent which, it should be kept open by the introduction of a wax bougie, or some similar article prepared for the purpose. Should the artificial perforation become fistulous, the removal of its inner wall, in the form of a tube, will rarely fail of effecting the object desired.

I will here take occasion to advert to a circumstance, which I should have noticed before. In muco-purulent secretion of the antrum, there exists sometimes, white, opaque, curdy flocculi, in such quantity as to obstruct the nasal passage; and even the artificial opening through the floor of the sinus is sometimes blocked up by them. They are easily removed by injections, and cease to be formed as the membrane is restored to health.

The next affection of these cavities upon which I propose to treat, is often connected with, or grows out of the disease of which I have just spoken.

Ulcers of the Antrum.—These are of two classes, the first has its seat in the mucous membrane of the sinus, and may be attributed to the following causes, viz: the presence of extraneous bodies, the accumulation and retention of vitiated secretions, the irritation produced by the presence of diseased teeth or fangs, the formation of alveolar abscesses, exostosis of the fangs of the teeth; or it may occur as an idiopathic disease of the lining membrane, induced by a scorbutic tendency, or venereal taint of the system. It may be properly observed here, that the particular form or character which these diseases assume, is dependent upon the tendency, or diathesis of the system; therefore, causes which in one instance would only produce a vitiated secretion, would in others, give rise to polypi, osteo sarcoma, or fungus hæmatodes. It is then obvious that very many diseases, differing essentially in their character, and therapeutical indications, may and do originate from the same causes, and it is important that this fact should be borne in mind.

The symptoms which characterize the affection, of which we are now treating, are continued pain in the antrum, with a discharge of slightly fetid pus, this evacuates itself at first through the nasal duct, but soon finds its way through numerous fistulous openings formed in the floor of the sinus. These ulcers sometimes take on a fungoid character; and fill up the sinus. In this state they are often mistaken for polypi: we can however, distinguish these tumours from polypus, by the bloody, fetid sanies which is discharged.

The treatment of this disease is, in its first stage, similar to that recommended in muco-purulent secretion, consisting in the removal of all sources of irritation, the evacuation of the morbid contents of the sinus, and the employment of stimulating and astringent injections. Where the affection takes on the fungoid character which we have mentioned, the sinus should be laid open, and the whole of the diseased mass removed with the knife and cautery. Should a reproduction of the tumour be indicated, the parts should be touched with the actual cautery, or the arsenical solution recommended by Mr. Bell, may with advantage be applied. After the extirpation of the diseased mass, the health of the parts may be restored by the use of astringent and stimulating injections, as the solution of the sulphate of zinc, tincture of myrrh, solution of argent. nitratum, &c.

The second class of ulcers found in the antrum are characterized by disease or death of the subjacent bone, and it may here be observed that the diseases of the bones are in many respects analagous to those of the soft parts, both being liable to irritation and inflammation, which they reciprocally communicate to each other. The bones, from their being less liberally endowed with nerves, and blood-vessels are more readily deprived of vitality than the more highly organized tissues. The disease now under consideration may grow out of simple ulcer, or any cause which will light up inflammation in the periosteal tissue, as the presence of diseased or dead teeth, the excessive use of mercury, a venerial taint, scorbutic diathesis, &c.

The symptoms are pain, a blackish and intolerably fetid discharge, where the disease is the result of a scorbutic tendency, it may be distinguished by the general scorbutic indications, as a leaden, ashy hue, sponginess and turgidity of the gums, ulcers upon the inferior extremities, &c. where it is caused by venereal taint, it is known from the previous history of the disease, and the nocturnal pains which characterize all affections growing out of this cause.

The proper course of treatment, will be to make an opening into the antrum sufficiently large for the evacuation of the diseased matter, and the removal of any dead pieces of bone, which may be found. As the affected bone cannot be cured, our object will be, to arrest the necrosis, and to aid nature in the exfoliation of such parts, as soon as they are entirely detached from the living bone. The *sequestra*, however, should not be interfered with, until they are entirely detached, for by so doing we might inflict more injury, than their presence would occasion. This together with such other local treatment, as the symptoms may indicate, will generally effect a cure if the cause be local; if however, it should result from any of the constitutional causes which have been mentioned, of course anti-scorbutic, venereal, or mercurial treatment should be adopted.

Exostosis of the Antrum.—This disease as are most others of the antrum, is much oftener than otherwise, produced by the irritation consequent upon the presence of diseased dental organs, it may however, occur independently of this cause; the law, that the particular development of these affections, is dependent upon the tendency or diathesis of the general system, will apply to this, as well as other forms of disease.

The symptoms are, a nutritive action of the fibrous coat of the mucous membrane or periosteum of the antrum, the subjacent bone becomes thickened by continual ossific matter, the membrane also becomes thickened and in some instances the whole cavity becomes nearly or quite filled; if suffered to progress, the destruction of the contiguous parts will ensue, and the ultimate termination of course be fatal. This kind of tumour may be distinguished by its heaviness or the sense of weight which the patient experiences, gives but little pain at first and is consequently not soon noticed. When it attains to considerable size the pressure upon the walls of the sinus will of course produce more or less pain, as the pressure may be slight or considerable.

The treatment will consist in the removal of the whole of the diseased mass, and the destruction of any part of the membrane by the cautery, which evidences a diseased tendency. This operation, will be subsequently described. The parts may then be restored to health by the same course of treatment advised for muco-purulent secretion. I will now pass on to the consideration of a species of tumour sometimes found in the antrum, denominated.

Osteo Sarcoma.—This, like the foregoing disease, results from a morbid action of the periosteal tissue, and I would here observe that all morbid growths arising from the periosteal tissue, are of a fibrous character, while those having their origin in the mucous tissue are vascular. This fact will enable us always to determine upon the origin, of those enlargements, and consequently the course of treatment most proper to adopt. Osteo sarcoma of the antrum, is a fibrous tumour, interspersed with patches of bony matter, the proportion of osseous matter however varies, existing in much larger quantities in some of these tumours than others. They grow rapidly, produce pain varying from that of a dull heavy character, to the most lancinating paroxysms, they suppurate, destroy the contiguous organs, and with them life.

The treatment to be available, must be prompt and decisive, for nothing short of an operation for the removal of the tumour will be productive of the least benefit; this to be effectual should be done in the early stage of the disease; for if deferred for a length of time, so debilitated and emaciated does the patient become, that there is great danger of his dying under the operation, therefore, under such circumstances, it would never be advisable to attempt its performance.

When an operation is determined upon, we are to prepare ourselves with suitable instruments. Those recommended by Professor Gibson, of the Pennsylvania University, consist of chisels, gouges, mallets, &c., but as the bony walls of the sinus are thin, and often very much softened by the disease, instruments less formidable should be preferred. The teeth or fangs, if there be any beneath the part to be operated upon, should be extracted, the gum should then be dissected up, and the external and inferior walls of the sinus removed with a sharp and strong pointed knife, cutting forceps, &c. The opening should in all instances be made sufficiently large for the ready removal of the whole tumour which in most cases may be soon accomplished by the use of properly shaped knives, and excising forceps, for separating adherent pieces of bone.

After the suppression of the hemorrhage, which is often profuse, the dressings should be removed, and the parts carefully examined, and any portions of doubtful appearance should be removed or destroyed by the actual cautery.

Should a reproduction of the tumour be indicated, the application of a moderately strong solution of arsenic, so managed as not to escape into the mouth, which may be accomplished in the following manner, will suppress it. Introduce a sponge of proper size, saturated with the solution into the antrum, then pass into the mouth, a semi-lunar shape piece of oiled silk, leaving its outer edge projecting out of the mouth; this should be adjusted and retained in its proper place by the patient: the solution will then escape over the silk into a basin or other receptacle, and the saliva into the same vessel from under the silk.* It need scarcely be observed, that the greatest precaution is necessary in the employment of this article.

The cure of the disease will be greatly facilitated by the employment of such injections, as the symptoms may indicate; little benefit will result from local treatment, or comparatively little, if the state of the system be not likewise attended to. As I before observed, in this affection, the system is generally found to be greatly debilitated, and emaciated with suffering. To sustain and invigorate it, the use of tonics, generous diet, and if practicable, gentle exercise should be resorted to. Should febrile symptoms manifest themselves, they should be subdued by anti-phlogistic treatment. I will now take up the class of tumours denominated

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* See Bell on the Teeth, p. 284.

Polypi of the Antrum.—Tumours of this class do not differ materially from polypi of the nose, they are however, generally much softer. They may and sometimes do originate in the nasal fossa, and by destroying the intervening bones force themselves into the antrum, and exist there secondarily, or they may originate in the mucous membrane of the sinus itself. They do not grow from the surface of the membrane but from its internal structure, the tumour is consequently lined by the outer lamina of the membrane. They usually grow rapidly, generally producing no inconvenience until they attain sufficient size to make pressure upon the walls of the cavity, consequently we do not know of their existence in their early stage.

The causes of this affection, Mr. Liston, in his treatise on surgery, observes "cannot be satisfactorily accounted for," I am of opinion however, that it may be very plausibly attributed to a relaxed and debilitated state of the mucous membrane, the presence of extraneous matter, or sanguineous determinations to the part.

The symptoms which characterize it, are, after the tumour has attained to considerable size, dull heavy pain, sense of weight, pain increases to the most exquisite paroxysms, the gums become turgid and spongy, the teeth are loosened and displaced, ulcers form in the mouth and nose, from which is discharged a fetid sanies, some part of the bony parieties give way and the tumour is precipitated into the mouth or nasal fossa, most frequently the latter. Its true character is then, and not till then, distinctly ascertained.

The therapeutical indications in this disease are simple, consisting principally in the removal of the morbid mass as in osteo sarcoma, and the employment of stimulating and astringent local applications, with suitable constitutional treatment.

We have now briefly noticed most of the diseases incident to the maxillary sinuses; and in conclusion, I beg leave to offer a few reflections, which now suggest themselves.

The views which I entertain, and have imperfectly expressed in this thesis, I am aware are dissented from in some particulars, by those whose attainments and experience, bespeak for their opinions the most deferential respect, and I am gratified with the reflection, that those differences are comparatively unimportant, at least so far as they influence the treatment of the various disorders upon which I have treated. In ascribing the causes of a large majority of diseases that develope themselves in the antrum, to a diseased state of the dental organs, or more properly to the irritation produced by their presence, I think I do nothing more than make a deduction, sustained not only by the phenomena of the diseases in question, but by the success of treatment predicated upon the opinions which I have endeavoured to set forth.

I do not, however, wish to be considered as regarding the maxillary sinuses as susceptible of morbid impressions from diseased dental organs only, on the contrary, I wish it distinctly understood, that I believe the antrum in common with other parts of the body, to be subject to disorders totally disconnected with, and independently of the health of the teeth. But I at the same time regard the irritation arising from a diseased condition of these organs as being altogether and by far the most frequent cause; and I believe proper attention to their health and preservation, or their prompt removal when they become so much diseased as to render their restoration impracticable, will wholly avert most of the malignant forms of disease incident to the antrum maxillare.

ARTICLE III.

Description of a Case of Alveolar Abscess. By Isaac I. Greenwood, M. D., D. D. S.

Some few years past a foreign gentleman applied to me for professional aid, who had been treated by an eminent surgeon dentist for several years for a diseased dens sapientiæ. On examining the case, the malady was found to be seated in the alveolus of the tooth on the right labial side of the dracranian maxillary at the base of the corenoid process, where it forms a conjunction and continuation of the alveoli. In the first instance it had been formed by an erosive exposure of the medulla of that organ. The patient being of a timid disposition, and the surgeon not determined in extracting the tooth, an abscess had formed, and the pus passing off from the weight of the matter aslantwise, and through the base of the alveolus of the tooth, had perforated the Levator, affecting the rotary muscles opposite the orifice, and through the anterior surface of the skin, immediately under the centre of the belly of the digastricus, where it pierces the meatus auditories externus, forming a considerable orifice; which issue he was in the habit of probing with a silver instrument, about six inches in length, and cleansing with lint, &c. It was found that in making use of this instrument and forcing it in the whole length of the canal, which was straight and considerably indurated, the rigidity being such that the digastricus could not have its full force of expansion, and the masseter muscle of that side at its lower portion was effected as well as the pterygoideus externus in such a manner, that the patient was not enabled to open his mouth more than half an inch.

By further probing the wound the instrument was found to strike upon a hard substance at the base, which by the sound was known to be the fangs of the diseased organ. The alveolus being destroyed on that side of the diacranian opposite, and on the labial section of the surface of the tooth; from the continuous issue of matter, the tooth irritating and acting as an extraneous body, and causing this flow, it was determined at once to perform the operation of extraction. No worse result could take place when the member was removed. The cutting was carefully yet fearlessly made, and the operation performed. The patient immediately feeling relief, the sanguineous discharge which followed was somewhat free, and considered as favourable. Yet still the indurated canal remained, and the rigidity of the parts not remedied. The patient was advised when the wound healed in a measure, to lubricate the parts externally with emollients, such as had been prescribed by his physician and were of a mercurial nature, to cause a pliantness and relaxation of the muscles. The advice was concurred in, and a restitution of the parts was the effect of the application.

LOOSENESS OF THE TEETH.

Among the various causes which produce looseness of one or several teeth, none is more common than inflammation of the alveolar processes and sockets. Sometimes this originates in disease of the tooth itself, or of the gums; but in other instances, the diseased process commences in the alveolar periosteum, and by spreading to the sockets and gums, it gives rise to great pain, swelling, and sponginess of the latter, while it eventually detaches the fangs of the teeth implicated in the attack, from the grasp of the sockets, and thus at last the teeth fall out, though in themselves they exhibit no appearance of decay.

The progress of the disease is accompanied by extreme pain, and as a puriform discharge oozes out from between the gums and the inflamed periosteum, many limit their attempts to local means, and often succeed in effecting a cure by frequent applications of leeches to the inflamed gum, and in very obstinate cases, by incisions freely made through the gums and inflamed periosteum. Last year a patient of mine was thus affected, and thus treated, and although under the care of a most skilful surgeon, and eminent as a dentist, he lost successively a left bicuspis and molar of the upper jaw. His sufferings were for a short time relieved by the extraction of each tooth, but in a few days became as agonizing as ever, when finding all the neighbouring teeth loose, and being told that they also must soon be drawn, he had recourse, in despair, to a celebrated homœopathic doctor, whose infinitesimal doses completely failed; for the patient's sufferings were produced by a direct physical cause, which lay far beyond the limits to which the influence of even the most powerful imagination can possibly extend. Happening to mention his wretched state to me, I immediately recollected, that a year before I had successfully treated him for a periostic affection of the sternum and ribs, and that hydriodate of potash was the medicine which served him most. I recommended him to use ten grains of it three times a day, and had the satisfaction of perceiving a daily improvement, so that pain and inflammation soon ceased, and in about ten days the teeth were all fastened.

The periostitis to which this gentleman was liable was of a rheumatic nature; otherwise his constitution was sound, and he was only thirty-four years old.—*Dr. Graves, in Dublin Journal. From the Bulletin of Medical Science.*

Bibliographical Notices.

On Dentition *and some coincident Disorders*. By John Ashburner, M. D. Member of the Royal College of Physicians, &c. &c. London, 1834, pp. 235, 18mo.

We do not recollect to have ever read a book of so small a size that contained so much really useful information as the one of which the above is the title. It is a most excellent little treatise, and though we do not believe all the doctrines advocated in it to be correct, yet nevertheless, its excellencies are so much greater and more numerous, than what we conceive to be its faults, we do not hesitate to pronounce it one of the very best works of the kind with which we are acquainted. Dr. Ashburner is an able and ingenious physiologist, and a good writer. He possesses in an eminent degree, the happy ability of conveying his ideas in a forcible manner, in few words. What he says, is generally to the point.

The work has been before the profession in England for some years, and we would be glad to see it republished in this country. It would no doubt meet with a ready sale both from the medical and dental professions. But our object more especially, in noticing it at this late period, is to direct the attention of our own more immediate professional brethren to it. The information contained in it will richly compensate for the trouble of its procurement and perusal.

From the following extracts the readers will be able to judge of the author's ability, and form some idea of the value of the work.—*Balt. Ed.*

"There is no circumstance relating to growth more striking, or more curious, than the division of life into epochs. The climacteric years of the ancients were multiples of seven; and they were pretty accurate observers of the changes which took place in the body at different periods. That there must be a rule regulating the grand epochs of development in a *perfectly healthy* individual, there can be no doubt. In the course of life, man appears, in the changes to which his frame is subjected, to go through several types of configuration: the same individual that had once, in the womb of his parent, the shape of a worm, and that subsequently rapidly traversed the types of other gradations of the lower animals, and became an infant breathing the surrounding air, is by no means to be recognized as *identical* with the vigorous man of thirty-five. His physiognomy alone points out the changes effected upon him, and we cannot doubt that there must be some ground for the vulgar observation that has come down to us, of the body undergoing remarkable changes during the course of successive climacterics. His progress through his varied types of configuration is dependent on the completion of each stage of his course. The measurement of time by chronometer—the indications of a completion of each advance of period—are illustrative of the trains through various successive types in the course of the development of a perfectly healthy person. The circumstances relating to dentition are but as isolated set of phenomena. All the organs of the body should have their chronicles; but it will be found that they are the wheels and springs of the time-piece. The chief *index* is remarked in the organs of mastication, and they respond to epochs.

When the first dentition is complete, nature appears to rest. The teeth, in number and in size, being sufficient for the wants of the child, there seems for a time to be no further effort of growth among them. The principle of a continual progress is, however, established in the system. Though there is an apparent rest, there is, in fact, a real march in all parts of the body. The clock does not incessantly strike, but the hands are moving. The law which regulates the trains of growth throughout the body, insists upon an additional energy being communicated at certain periods to organs whose epochs of advancement to a type of more exalted perfection had arrived. It is not to be supposed that because the first set of teeth have all appeared, there is no change in progress in the jaws, or in the germs of the second set of teeth. The jaws are gradually expanding, and as they are becoming larger, the capsules of the teeth of the second dentition are preparing the organs they have to build for assuming their stations.

Let us consider the changes undergone by the jaws and by the teeth of the first dentition. When the progress of growth has extended so far as to render the first set of twenty teeth insufficient for the purposes of complete mastication, they appear to become loose in their sockets: in reality, an absorptive process is established, and their roots are eaten away. The pulp having first decayed, the crown crumbles away from the gums. Normally, this change takes place in the teeth exactly in the order in which they were originally formed, and in which they cut through the gums. The central incisors of the lower jaw fall away first; then those of the upper jaw, between which the growth of the bone has created a very remarkable space; then go the interior lateral incisors; and so on. Before, however, any of the teeth of the first set fall out, the jaw has already acquired a considerable growth, and four molar teeth have appeared at the back of the existing twenty teeth. These four are permanent teeth; they occupy a large space, and their relations to the first set and to the teeth which are afterwards to appear, will be more advantageously explained after some further anatomical inquiries; and these must relate to the organs concerned in supplying the first and second set of teeth with nourishment, and the history of the changes they undergo, in order that the deciduous teeth, and the processes of bone which belong to them, may vanish, and allow the permanent set to grow up and take a normal alignement."

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"How do the teeth of the second dentition proceed to displace those of the first dentition? Much absurdity has been published on this question. They do not displace the teeth of the first dentition. The jaws grow; they enlarge: as their volume increases, the germs of the permanent teeth continue to develope the organs they have to form. These germs are enclosed in cells in the bony substance of the jaws. Up to the age of five, six, or seven years, the jaws of a child may be said to contain two sets of *sockets*. Hunter, Blake, De la Barre, and Serres, use this expression, though it is not quite correct; for the teeth of the second dentition, though not yet perfect, are lodged in cells below, and a little behind, the alveolar processes of the jaw which belong to the first teeth. The cells of the second teeth occupy a curve less extensive than the alveoli of the first, and are separated from these by a bony lamina, forming a kind of partition, which keeps the two sets of teeth quite distinct from each other.

The germs of the second set of teeth have long existed in the jaws. It has been remarked, that the germs of the first dentition are attached, in the fœtus, immediately to the membranous folds, which, at this period, constitute the gums; and that those of the second dentition are suspended from them by means of small pedicles. When the capsules of the first dentition were advancing towards their development, and were approaching the upper part of the gum, those of the second dentition appeared to retreat into the depth of the jaw, and hung to the gums by their pedicles. The pedicle, in the progress of growth, is destined to perform an important part. It becomes a fibrous canal, communicating between the alveolar margin and the cell in which the capsule is lodged: it is apparently periosteum; but whatever may be its real nature, it leads to the tooth, and becomes continuous with the external layer of the dental membrane."

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"We see very few persons who have not suffered more or less severely in the mouth, from the local consequences of anormal dentition. It would be very trite to speak of the common occurrence of tooth-ache; yet the subject of the influence of anormal growth in the production of diseases of the mouth, has been very little investigated. It is generally acknowledged as a fact, that children suffer more or less during the progress of dentition; and that very few adults are seen with a perfectly normal condition of the mouth; indeed, so rare is the occurrence of a normal state of the teeth, that the beauty of a fine set of teeth is a striking object of admiration. The local inconveniences resulting from anormal trains of growth in the teeth and jaws are not few. The surgeon is already well acquainted with this part of our subject. Among them may be enumerated those congenital defects more or less allied to the fissure we know as hare-lip; irregularity in the curved alignement of the teeth; decayed teeth; other diseased states of the teeth inflammations, abscesses, and tumors, resulting from these, or from irritations in the course of growth to the jaw-bones, muscular, cellular, and glandular tissues of these parts. The mouth, the throat, the nostrils, the palate, and all the neighbouring parts, have disease inflicted upon them occasionally, by anormal conditions of the teeth and jaws."

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"If the proposition had at any time been put forth, that anormal states of dentition were invariably and immediately the *causes* of serious disorders of health, a doctrine would have been advanced which the experience of most medical men would have enabled them to subvert at once. The country practitioner more especially would instantly put his negative upon the assertion; for in his experience, unless the district in which he practises be a marshy country, or have circumstances about it depressive of the vital forces, anormalities in development are, for the most part, compensated by the energy which a pure and invigorating atmosphere communicates to the nervous system. In the country, obstacles to the normal progress of growth in the teeth and jaws, may, and occasionally do, intervene; but the forces of the constitution are in most cases sufficient to overcome the inconveniences resulting from them. In London, and in large towns, it is different; errors in the progress of growth communicate their influence to various organs; and according to the tendencies of the constitution, according to the *idiosyncrasies* of the individual, or according to the condition in which surrounding circumstances may have for the time placed him, the mischief, which may vary certainly in degree, is felt in one set of organs or in another. Unless much more were known of the precise coincidence which a certain anormality may require—of the precise trains of symptoms indicating certain erroneous trains of growth—it would be impossible to point out the diseased states and irregular developments that are linked with each other.

We are not aware fully of the coincident events connected with development, which take place in the earlier periods of infancy—a time of life when the mobility of the frame, and the rapidity of change in the course of growth, render their consequences striking. In pointing out, therefore, the links in the chains of diseases which hang on irregularities in the course of development, the most that can at present be attempted is to trace analogies; and even in this task, the complications that beset every event in the animal economy may tend to confound us, and to lead us wide of the direct line of our inquiry.

Regarding the infant, we ask if coincidences of disease with anormal dentition can fairly be traced before the usual period of cutting the teeth? Superficial observers have a fashion of scouting ideas inconsistent with the notions they have imbibed from their masters. We know well that children, at very early periods after birth, are the subject of convulsions. Irritations upon the skin may be vicarious with these epileptic attacks, or irritations upon the mucous part of the alimentary canal may affect the nervous centre. Why may not a turgid state of vessels about the dental matrices, in the simpler and less complete conditions of organization belonging to this period of life, immediately compress the dental, or even the maxillary nerves? The subject of convulsions in earlier infancy is yet involved in considerable obscurity, and if we shall at a future time see reason to approach the conclusion, that pressure applied under certain conditions to a nervous tendril of a motor portion of the fifth pair is nearly tantamount to pressure applied to certain parts of the brain, we may well believe that irregularities in the course of growth at the earlier periods of infant life may produce pressure that shall be succeeded by convulsions. Perhaps pressure or other irritation, applied to a sensitive nerve, may be succeeded tic douloureux, or a slighter neuralgia.

A fine healthy-looking child of a strong Irish woman died at thirteen weeks of age, of a convulsion fit. My suspicions as to its having had improper food were not well founded. The mother was anxious to have the cause of death ascertained, and I found no difficulty in obtaining leave to open the body. The organs for the most part were healthy; the stomach contained only a little milk; no error upon the mucous surfaces of the intestines. Skin perfectly healthy. The contents of the thorax, as well as those of the abdomen, were quite healthy. In the head there was a slightly injected state of the vessels of the pia mater, but in other respects the brain was quite healthy. The capsules of the incisor teeth were large and very vascular, much more advanced than usual. With a lancet the cartilaginous rim of the lower jaw was attempted to be removed, with a view of exposing the capules of the molar teeth; but these were so unusually distended with fluid, that the instrument cut into them and let it out. This was an example of development proceeding too hastily."

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The Structure, Diseases, and Treatment of the Teeth considered, with a view to the abolition, in all common cases, of the pernicious practice of Tooth Drawing. By WILLIAM WARDROPER, M. R. C. S. S. &c. LONDON, 1838, pp. 59, 8vo.

The object of the author of this work, seems rather to have been to increase the repugnance which most persons feel to having a tooth extracted, than to impart any really useful or valuable information. The practice recommended a few years since by Mr. Fay, of London, of excising the crowns of such decayed teeth as cannot be restored by proper surgical treatment, in place of removing them altogether from their sockets, and which so soon sunk into merited disrepute, is that which Mr. Wardroper, and apparently unconscious that it had ever before been advised, proposes to substitute for extraction. Opposed as this practice is, to every thing like reason and sound philosophy, it never had many advocates, and yet had Mr. Wardroper been aware, at the time he wrote his little treatise, of the deplorable examples of injury that had resulted from it, he probably would not have become its champion. We could enumerate a number of cases, were it necessary, of protracted suffering occasioned by it that have fallen under our own observation, but the pernicious tendency of this unscientific practice, is too well known to need comment.

It would be well for Mr. W. before he again attempts to inveigh a practice which both reason and experience teach to be correct, to make himself better acquainted with the laws of the animal economy, than the views set forth in his present treatise, evidences him to be. We have no doubt, however, that his own observations and experience, have, long before this, convinced him of the incorrectness of the opinions which he has advanced.—*Balt. Ed.*

Recent Publications.

Précis sur le redressement des dents. Par J. M. A. Schange, in 8o. plus 8 pl. Paris, 1842.

In the *Bulletin Bibliographique,* of February the 1st, published by Hector Bossange, the above work is announced. Not having yet seen it, we are of course unable to speak of its merits. It is said, however, to be an excellent treatise on the means of preventing and correcting irregularities in the arrangement of the teeth. It also contains some remarks on obturations of the palate. We will notice the work more at large after we shall have received it.

Works in Progress.

Dr. James D. M'Cabe, of Richmond, Va. is, we understand, preparing a work on the *Institutes of Dental Surgery,* in which he intends to present a broad view of the science in all its *phases* and *details.* A work of this description is much needed, and we are gratified to learn, that one so competent to the task, has undertaken its preparation. Dr. McCabe is a good writer, and we think we hazard little in saying, that his work will be an interesting one; and one that will meet with a ready and quick sale. This is perhaps, saying a great deal in advance, but from our knowledge of the abilities of Dr. M. we have confidence to believe that our expectations will be fully realized. We hope that it will not be long before we shall have an opportunity of announcing its publication.

Traité complet de l'Art du Dentiste, d'après l'état actuel des connaissances. Par F. MAURY, dentiste de l'Ecole Royale Polytechnic. Nouvelle edition, avec un Atlas de 40 planches. Paris, 1833, 8o. pp. 578.

A Complete Treatise on the Dental Art, based upon actual experience. By F. MAURY, Dentist of the Royal Polytechnic School. New edition, with an Atlas of 40 plates. Paris, 1833; 8vo. pp. 578.

The above comprehensive and excellent treatise on Dental Surgery, is, we are happy to inform our readers, about to be translated, by JOSEPH B. SAVIER, D. D. S. of Baltimore; and that those of our professional brethren who have not had an opportunity of seeing it, may be able to form a correct idea of the plan of the treatise, we would state, that as its title implies, it embraces the various branches that properly appertain to the province of the dentist, and we know of no other of the same extent (578 pages) that contains the same amount of useful matter.

Dr. Savier, though young in the profession, bids fair to become one of its brightest ornaments, and the performance of the task in which he is now engaged, will entitle him to the warmest thanks of his professional brethren.

The work is divided into three parts. The first contains an "Anatomical description of the teeth and their appendages; the phenomena of first and second dentition; the diseases of the dental organs proper and those of the mouth separately." The second part is devoted to "hygiene and therapeutics of the mouth at the various periods of life, operations that belong essentially to the dental art, and the various instruments suited to each operation." The third part embraces the "Mechanical department of the art, the mode of supplying lost teeth; definition of technicalities employed in the art, and an alphabetical table of most of the authors, who during the last two centuries and upwards, have written upon some department of the profession."

That the work is held in high estimation by the dental profession in France, is proven by the fact, that it has passed through, we believe, five editions within the last fifteen or twenty years.

Miscellaneous Notices.

Dr. Koecker on the Diseases of the Gums.—In the last number of our Journal, which contained a highly interesting paper on the diseases of the gums, by Dr. H. H. Hayden, we stated that Dr. Koecker's views upon the same subject would appear in the regular course of the publication of his "Principles of Dental Surgery," in the library part of our present number. They will be found under the head of "the devastating process," commencing on page 144, to which we beg leave to refer our readers.

Progress of Dental Surgery.—In a former number of our Journal we copied from "*The Boston Medical and Surgical Journal,*" a notice alluding to a communication that had appeared in the "*London Lancet,*" in which the efforts making in the country to advance the science of Dental Surgery, and elevate the respectability of the profession were favourably spoken of. The following, which we copy from the "*New York Lancet,*" is, we presume, the communication alluded to, and the editor in giving place to it, in connection with the "Second Annual Announcement of the Baltimore College of Dental Surgery," which we omit, says under the head of

"*Progress of Dental Surgery in the United States.*—We have in a former number of our journal, given a brief expression of the high gratification with which we, in common with all friends of science and of suffering humanity, witness the rapid strides which the art of dentistry is at present taking in its progress towards that elevated and honorable position to which it is justly entitled. We triumph in the advancement of surgery, and with an honest pride rejoice as we relate the evidences of its progress, and give permanent record to every fresh accession to its glory. And why should we discover less delight or enthusiasm, in observing the progress of another important branch of that noble profession, to which we have devoted our energies and talents? In this spirit, we cheerfully afford a considerable portion of our space to the following interesting articles—one illustrative of the present state and prospects of dental surgery in this country, and the other, expressive of the estimation in which the labors of our countrymen are held by enlightened minds in Europe.

PROGRESS OF DENTAL SCIENCE IN AMERICA.

To the Editor of the London Lancet:

Sir:—At a time like the present, when the subject of general medical reform occupies the especial attention of the profession, and the necessity of providing some protection for society against the inroads of empiricism, becomes daily more evident, it may not be out of place to direct attention to the strenuous efforts made on the other side of the Atlantic, to rescue a most useful, though perhaps humble branch of surgery, from the depths of degradation to which it has been reduced, by the disgraceful quackery of a great portion of those who profess to follow the avocations of the dental surgeon.

After encountering much opposition, and overcoming many serious difficulties, a few of the leading dentists in New York, aided by some equally praiseworthy professional brethren in Philadelphia, Baltimore, and Boston, succeeded early in 1839, in forming an association, from which shortly after emanated the first number of a monthly journal, under the title of the "American Journal of Dental Science;" the avowed objects of the publication being to afford facilities for the diffusion of knowledge in dental theory and practice, and for that unreserved intercommunication of facts between the members of the profession which ever opposes the firmest obstacle to the growth of quackery, inasmuch as one of the strongest distinctive attributes of an empiric is, *to have*, or *to pretend to have, professional secrets.*

The first volume of this journal has been completed in twelve numbers, and it has been determined to publish the second volume in four quarterly numbers.

The contents of the first volume have been of an exceedingly interesting and useful character, reflecting the greatest credit on the discernment of the able editors, Dr. Harris, of Baltimore, and Dr. Parmly, of New York.

Amongst the earliest beneficial results of the publication of this journal, has been the complete organization of the "American Society of Dental Surgeons;' a society which, amongst many other laudable designs, professes its object to be the establishment of dental colleges in the various states of the Union, and ultimately the conferring of a degree in dental surgery on those properly-qualified candidates who may be desirous of obtaining such evidence of their theoretical and practical knowledge.

In November, 1840, the Baltimore College of Dental Surgery commenced its first session, under the guidance of four professors; viz. of dental physiology and pathology, of anatomy and physiology, of practical dentistry, and of special pathology and therapeutics; and this institution is now in full and successful operation. Considerable progress has also been made towards the formation of a similar establishment in New York.

If facts and observations connected with dental pathology may be deemed worthy of a place in the *Lancet*, I shall experience much pleasure in offering to your notice occasionally some reports of the proceedings of the American Association, in the hope that a little agitation of the subject may be instrumental in exciting the attention of those eminent members of the profession who are best qualified, by the position they occupy, to bring about an effectual reform in this, as well as other branches of surgery. I have the honor to be, sir, your humble servant, W. H. Lintott.

Salivation caused by fillings of the "Amalgum of Mercury and Silver" in the Teeth.—We have before had occasion to speak of the hurtful effects that result from the employment of the "amalgum of mercury and silver," for filling teeth. We could mention many cases where its use has been followed by serious consequences, and that ptyalism is often, in this way, produced, is a fact, now, too well established to admit of doubt. A case was related to us a few days since, of a gentleman, a resident of the District of Columbia, who, about eighteen months since, while in the city of London, applied to a dentist for the purpose of having several large cavities in his teeth, filled. The operation was performed in a few minutes, and to the gentleman's great satisfaction. In a few days, however, his gums began to inflame and swell, and these symptoms were gradually followed by an increased flow of saliva, inflammation of the mucous membrane of the mouth generally, and of the alveolo-dental periostea, soreness and loosening of all his teeth, fetor of the breath, anorexy and all the other symptoms attendant upon a mercurial diathesis of the system. Having visited Paris about three weeks after the operation, and the symptoms becoming more and more aggravated every week, he at length consulted an eminent medical gentleman of that metropolis, who, after having carefully investigated his case, informed him that he was salivated. But when the gentleman assured him that he had not taken mercury in any form for ten years, and that he had never been salivated in his life, his physician stated that if the opinion which he had given was incorrect, he was ignorant of the nature of his disease. Learning, however, in the course of the conference, that he had had a number of his teeth filled, ten or twelve weeks before, in London, with a "mineral paste," he was induced to examine the fillings, which proving to be an amalgum of mercury and silver, the mystery was at once explained. The fillings, of course, were at once removed, and though the constitutional symptoms, as we were informed, soon subsided, there still remains a chronic inflammation and thickening of the alveolo-dental membranes and looseness of the teeth.

Meeting in Boston.—The members of the American Society of Dental Surgeons, have, we presume, all been regularly notified of the time and place of the next meeting, and we hope that the considerations urged by the recording secretary will influence all to make some sacrifices to be present on the occasion.

Completion of the Second Volume of the American Journal and Library of Dental Science.—The present number completes the second volume of this publication, and the occasion seems to be one, which calls for a remark or two from those under whose editorial management it has been placed. Before the first number of the third volume shall have been issued, another meeting of the American Society of Dental Surgeons, will have taken place, and as the editors are elected from year to year by this association, we know not that our present relationship to the Journal will continue any longer, but we think we may be permitted to say, that the volume now completed, evidences a determination on the part of those under whose auspices it is published, to send forth a periodical that shall be creditable to themselves and valuable to the profession; indeed, the flattering commendations it has already received from many of the most distinguished of our professional brethren both in this country and Europe, assure us that it is appreciated. The favourable manner too, in which it has been regarded and spoken of by the medical press and profession throughout the country, bear decided and unequivocal testimony in favour of its value, and we would here take occasion to observe, that these evidences of approbation and friendly regard, have been to us, as they must have been to every member of the society, and all who feel any interest in the advance of that department of medicine, to the dissemination of a knowledge of which, its pages are exclusively devoted, a source of peculiar gratification. And, these tokens of approbation have been the more grateful as they have been spontaneous on the part of those who have given them. Of the medical periodicals which have noticed it in terms of high commendation, it gives us pleasure to mention the following: "*The Boston Medical and Surgical Journal;*" "*The American Journal of Medical Sciences;*" "*The Bulletin of Medical Science;*" "*The New York Medical Gazette;*" "*The New York Lancet,*" and "*The Maryland Medical and Surgical Journal.*" For the gratification of such of the friends of the "American Journal and Library of Dental Science," as might be glad to know the estimation in which it is held by its medical cotemporaries, we copy from three or four of those just mentioned, what their editors have said concerning it.

The Editor of "The Boston Medical and Surgical Journal," in noticing the appearance of the first number after it had become the property of the American Society of Dental Surgeons, says—

American Journal and Library of Dental Science.—With the commencement of the second volume of this unique periodical, published in Baltimore and New York, we feel it incumbent on us to speak of its character, its influence, and its claims. If it had been announced, a dozen years ago, that a journal was about being published, exclusively devoted to the interests of dentistry, very likely the most judicious amongst us would have spoken of the impossibility of sustaining it, even if there were materials for filling its pages. Such a journal, however, does exist, of ample dimensions, and generous in all its expressions towards men in other pursuits. It is distinctly scientific in its character—and thus it carries its own recommendation to those who might apprehend that such a work would be made the instrument of a cunning or ambitious individual, who would not only use it for his own personal influence, but also convert it into an engine of oppression towards those whom he might wish to keep out of sight. No such feeling has ever been even remotely manifested. The Journal breathes nothing but a fervent disposition to distribute knowledge, and raise the brotherhood to an equal level of scientific eminence and respectability. The result of its influence, together with that of the Dental College, on the character of the dental profession in the United States, must therefore be incalculably beneficial. It will also tend to purge the land of all pretenders to dentistry. The public sentiment accords most harmoniously with the efforts of the leading members of the new dental association. People will not have their teeth ruined by an ignoramus, because they can perceive his skill by the manner of operation, however willingly they may swallow boluses that sap the foundation of health. In short, this Journal forms an era in modern dentistry, of which those devoted to the business, may well be proud. Not to encourage this publication, now published under the auspices of the American Society of Dental Surgeons, is an evidence of being behind the age, and denotes wilful ignorance of the rapid improvements in that important department of science. Physicians and associations should order it for the two-fold object of personal improvement and encouragement of the worthy proprietors.

From "The American Journal of Medical Science," we copy the following—

"*The American Journal and Library of Dental Science.*—This work is at present edited by Chapin A. Harris, M. D. of Baltimore, and Solyman Brown, M. D. of New York, and is published under the auspices of the American Society of Dental Surgeons. Since the existing arrangement, which commenced with the second volume, (Oct. 1841,) the work has been greatly improved in its appearance. It is every way exceedingly creditable to all concerned, and one, we should think, indispensable to every dentist who desires to keep up with the progress of his science and art."

The Editors of "The Maryland Medical and Surgical Journal," in speaking of it, say—

"Its appearance in new dress is highly creditable to the publishers and editors. As a specimen of typography it is unrivalled by any of the numerous Journals which come to us. From the hasty examination of its contents, which as yet we have found time to bestow, we are inclined to think the "*matter*," unsurpassed by the accompanying "*dress*." * * * "We cordially welcome this '*helper*,' in the cause of science, and feel that the present argues very favorably for the future numbers of our cotemporary. We hope its value will be fully appreciated by every friend of medical and dental literature."

It is thus noticed by the Editor of "The New York Lancet."

"Dental surgery is rapidly attaining that honorable position among the varied departments of science, to which it is entitled, although it is comparatively very recently that it has been prominently presented as a distinctive branch of scientific investigation. The above journal is published quarterly under the auspices of the 'American Society of Dental Surgeons,' an association which has lately been organized for the purpose of advancing the interests of this important branch of the profession, and exposing the shallow pretensions and impositions of quackery. The 'Journal' is conducted with great tact and talent, and appears to be well calculated to advance the great objects of the association, of which it is the organ. We will take an early opportunity of introducing our readers to a profitable acquaintance with several valuable articles in the numbers at present on our table."

To make it a medium of useful information by the publication of original and other papers connected with the theory and practice of dental surgery, and the republication of scarce and valuable works, is the wish and design of the association whose organ it is, and if there have been any so illiberal and narrow-minded as to suppose that its object was the subservance of any less noble purpose, we are happy to believe they are few in number, and found only among the ignorant and selfish. The sole object of the Journal, then, being the dissemination of such scientific truths as may be useful to the dental profession, we believe it will continue to be sustained. The present subscription to it is sufficient to defray the expenses of its publication, and the list of subscribers is steadily and constantly increasing; and since the commencement of the present volume there has been little cause of complaint on account of non-compliance with the terms of subscription. Most of the subscribers have paid cheerfully and promptly. There are, however, a few who are yet in arrears, and as the amount due from them is needed to complete the payment of the expense incurred for its last year's publication, we hope that none, after the receipt of the present number, will delay a day longer the payment of his subscription. And, while upon this subject, we would request of those who intend renewing their subscriptions, to forward the amount previously to the first of September, inasmuch as the first number of the next or third volume will be issued at that time.

Hemorrhage from the Extraction of a Tooth.—Dr. Mantell states that in a case of profuse hemorrhage from the extraction of a loose tooth, in a child seven years of age, after all other methods had failed, and a fatal termination was expected, constant pressure was effected by a gold plate accurately adapted to the gum, by a dentist, and the bleeding was effectually suppressed. The means specified by Mr. Roberts, in the 22d No. of the Lancet, had previously been had recourse to with but temporary effect. A paste of plaster of Paris placed on the gum in a soft state, afforded upon its consolidation a firm compression, and the hemorrhage was controlled for several hours; but on taking food the application was loosened, and the bleeding returned. The young lady, the subject of these remarks, had been suffering from purpura hemorrhagica; and on a previous occasion alarming hemorrhage had followed the accidental removal of a loose tooth.—*London Lancet, from Boston Medical and Surgical Journal.*

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